SUPPLEMENT

TO THE

ANNUAL REPORT

OF THE

State Engineer and Surveyor

OF THE

STATE OF NEW YORK

For the Fiscal Year Ended September 30, 1911

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REPORT

OF

BUREAU OF HYDRAULICS

DEPARTMENT OF BARGE CANAL,

Comprising the Twelfth Annual Report on Stream Gaging

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4/12/46. Lockrows Book Store

Report on the Gaging of Streams for 1911.

Hon. John A. Bensel, *State Engineer and Surveyor:*

Sir.— I have the honor to submit the report of the Bureau of Hydraulics, Barge Canal Department, for the calendar year 1911.

This report contains stream gaging data obtained during the year 1911 as follows: The observations of water-surface elevations and records of the discharge of streams along the lines of the Barge canal; gaging records of streams throughout the state, furnished by the United States Geological Survey in coöperation with this Department, and other stream gagings furnished by corporations and individuals.

SCOPE OF WORK DONE.

The Bureau of Hydraulics, as a specific branch of the Barge Canal Department, was organized in 1907. The work carried on by this Bureau is chiefly along the following lines:

(1) Maintenance of gaging stations in connection with the Barge canal work.

(2) Investigations and reports on special hydraulic problems arising in connection with the Barge canal work.

(3) Preparation of defense for the State in hydraulic cases, including claims for backwater, damages to water power by diversion and appropriation and other similar cases before the State Board of Claims.

DEVELOPMENT OF STREAM GAGING IN NEW YORK STATE.

Preceding the year 1900 there had been comparatively little work done in connection with the gaging of streams in this state. In the original construction of the Erie canal the water supply available was usually greatly in excess of the amount required and comparatively few gagings of streams were made at that

time, of which there is any record. Occasional gagings by private interests were made, which have been recorded, such for example as gagings of West Canada creek about 1820 by John B. Jervis. The earliest continuous records of the flow of a stream throughout any considerable time in this state, now on record, are those of Eaton and Madison brooks, made by Mr. Jervis as Chief Engineer of the Chenango canal in the 'forties. Systematic gagings of Croton river were begun by the city of New York in 1868 and have been continued down to date, forming an extensive and valuable series of data. Gagings of the west branch of Croton river and of small streams on Long Island were made by the city of New York at about the same time that the Croton gagings were begun. Gagings of Hemlock lake outlet were made by the city of Rochester in the 'seventies under the direction of Mr. Emil Kuichling and Mr. George W. Rafter. These engineers also obtained short gaging records on a number of small streams in central and western New York.

In 1888 systematic gagings of Hudson river at the dam of Duncan Company at Mechanicville were instituted and have been continued down to the present time. In 1892 to 1894 gagings of several smaller streams in the vicinity of Albany and Troy were obtained by the Water Departments of those cities. In 1894 and 1895 Mr. George W. Rafter undertook to establish permanent gaging stations on upper Hudson and Genesee rivers, and these records have been continued with some interruptions down to the present time, but systematic gaging of streams for the purpose of obtaining continuous records generally throughout the state cannot be said to have been undertaken until 1898, when about twenty gaging stations were established by George W. Rafter for the United States Board of Engineers on Deep Waterways. These stations were taken over by the United States Geological Survey and the State of New York in 1900 and formed a nucleus of the coöperative stream gaging work since carried on.

Stream gaging work was systematically undertaken by the State Engineer's Department in 1900, and an appropriation of

$1,000 was obtained by the State Engineer to be expended in coöperation with the hydrographic branch of the United States Geological Survey. The Geological Survey was to expend an equal or greater amount on stream gaging work in the state during the same year. The work was placed under the general supervision of the Geological Survey, subject to advice and approval of the State Engineer. Robert E. Horton was appointed by the United States Geological Survey to take charge of the coöperative stream gaging work in New York state and the work was continued under his direction as District Hydrographer until 1906, when Mr. H. K. Barrows became District Hydrographer, continuing in that position until the spring of 1909, when Mr. C. C. Covert was made District Hydrographer.

An appropriation for stream gaging by the State Engineer's Department in coöperation with the Geological Survey has been made in each year from 1900 to 1911, excepting in the year 1905. The records were maintained during that year by the Geological Survey and were furnished to the State Engineer's Department for publication in the usual manner. The present report is the twelfth annual report of stream gaging work conducted in conjunction with the State Engineer's Department.

The necessity of having extended and reliable records of the flow of streams became very evident at the inception of the great hydraulic works undertaken in the state of New York within the past few years, notably the Barge canal construction by the State and the Ashokan reservoir water supply of the city of New York. About one hundred gages were established in connection with the Barge canal work, chiefly in the years 1904 and 1905. These were mainly for the purpose of determining the water level rather than the discharge, but inasmuch as it was found that the data regarding discharge could be obtained advantageously at a considerable number of these stations, that work was also undertaken and has been carried on by the Bureau of Hydraulics in conjunction with the general supervision of the coöperative system of gaging work. Gaging stations established by the Geological Survey in coöperation with the city of New York and with the State in the Catskill region were taken over by the Board of Water

Supply, chiefly in the years 1906 and 1907, and have been continued to the present time. A considerable number of gaging stations have also been established by the State Water Supply Commission in coöperation with the United States Geological Survey. The results of all these gagings for different portions of the state by various parties, as well as the results of gagings by private individuals, wherever available, have been included in the annual reports of the State Engineer. The object in view has been to include in the State Engineer's reports as complete a record as possible of reliable gaging data throughout the entire state.

METHODS EMPLOYED.

In the establishing of gaging stations no single method of gaging has been employed to the exclusion of others. In many instances two or more methods have been combined at a single station. The principal methods have been the use of dams as weirs in conjunction with records of the flow through turbines or other outlets at mills, and the current-meter method. Gagings by thin-edged weirs and through thin partitions or orifices have been used to some extent in the case of small streams. Surface-floats, rod-floats and surface-slope methods are also used in cases where other methods cannot be utilized.

The more important features of gaging by the principal methods used are described in the following paragraphs:

Gaging Stations at Dams and Mills.— In determining the discharge at dams and mills the method of procedure is as follows: A profile of the crest of the dam is obtained and is divided into sections, all points in a given section being nearly or precisely at the same elevation. The discharge over each section is computed for a series of crest depths, ranging from zero to the extreme high-water mark. The summation of these sectional discharge curves furnishes data for a rating table for the entire dam, from which the volume of flow corresponding to any gage height can be read directly. When flash-boards are placed on dams, the conditions are reduced more nearly to those of a standard thin-edged weir, and Francis' well-known formula has been used in computing the discharge. The flow over waste-weirs, auxiliary spill-

ways and flood overflows has been calculated in a manner similar to that used for dams. The amount of flow through head-gates, sluiceways, feeder gates and similar openings has been calculated from the formula for orifices.

In estimating the discharge through turbine water-wheels the results of tests, made at the testing flume of the Holyoke Water Power Company, have been largely depended upon, the mean discharge for each day having been computed from the observed working head, width of opening of speed gates and number of hours each wheel has run. A record of these facts is kept at each of the stations where there are mills in connection with dams.

One difficulty encountered in gaging northern streams results from the accumulation of ice during the winter season. It has been found impossible to keep some dams clear of ice, and an effort is made to keep a record of the length of the clear and unobstructed portion of the dam, from which a correction in the calculated flow can be made.

The method of gaging at dams and mills and the necessary data for the calculation of discharge over weirs or through turbines may be found in the water-supply and irrigation papers of the United States Geological Survey, Nos. 180 and 200.[a]

Current-meter Gaging Stations.— In making gagings of streams the usual method of procedure is to divide the stream into subsections usually of five to ten feet width. The velocity is usually measured at the median point of each subsection by means of the current-meter, the meter wheel usually being submerged at six-tenths of the depth of the stream. The revolutions of the meter wheel are recorded for a period of 100 seconds. The time is noted by means of a stop-watch reading to one-fifth second and the period of observation is usually subdivided into two intervals of fifty seconds each. Careful soundings are taken at times when the conditions are favorable and standard cross-sections are prepared therefrom, from which the areas of the subsections can be taken out more accurately than from the individual soundings made in connection with the meter measurements. A simple

[a] "Weir Experiments, Coefficients and Formulas" and "Turbine Water Wheel Tests and Powe Tables," by Robert E. Horton.

multiplication of the velocity in each subsection by the cross-sectional area to which it applies gives the rate of discharge for the subsection. A summation of the quantities for the several subsections gives the total measured volume of flow. A river-height gage is established at each current-meter station, from which the stage of the stream is observed once or twice daily. Current-meter measurements of the discharge are made from time to time, as opportunity permits. After a sufficient number of discharge measurements have been made they are plotted, using the gage heights of the stream as ordinates and the measured discharges as abscissas. A mean curve is drawn through the plotted points showing the discharge rate in second-feet as a function of the gage-reading. By means of this curve the average discharge rate for each day is deduced from the record of the height of the stream kept by the gage reader.

At some locations where discharge data are required, it is impossible to obtain a permanent rating table, owing to continued or irregular changing of the regimen of the stream by backwater from dams, ice or log obstructions, or from the growth of aquatic vegetation. At such locations the discharge is determined from such measurements as can be made with corrections of the gage heights determined from a comparison of the discharge at different times.

The principal sources of error in gaging streams by the current-meter method are due to the effect of slack, or nearly slack water in any part of the cross-section, or to backwater from dams, from obstructing ice, or from tributaries entering below the gaging station, thereby causing the river stage to rise at times without a proportional increase in the discharge. In accordance with the well-known Kutter formula, the volume of flow in an open channel is a function of the slope, the area of cross-section and the wetted perimeter. When a stream is rising, the slope is usually greater at a given stage of the stream than at the same stage when falling. Northern streams, as a rule, rise rapidly and fall gradually, so that the stream is falling on the majority of days of the year. The error from the above source is small, inasmuch as the discharge varies only as the square root of the slope. The principal

difficulty encountered results from the freezing over of streams in winter. The ice serves greatly to increase the wetted perimeter of the measuring section, thereby modifying the rating curve. Whenever practicable, discharge measurements during winter months are made through the ice.

Rating of Current-meters.— By courtesy of the owner, arrangements were made during 1907 to rate the current-meters used by the Department at an unused canal slip in the Albany lumber district. For the purpose of rating meters a track 120 feet long was laid alongside the canal slip. The meter to be rated is suspended from an outrigger attached to a car that runs on the track. The car is drawn at a uniform velocity along the track by means of a windlass and tackle. The car is run at various speeds covering the ordinary range of velocities occurring in rivers and canals and the time required and number of revolutions of the meter wheel during each run are recorded. From these data a rating table for the current-meter is prepared, by means of which the velocity of flow of a stream can be deduced from the observed revolutions per second of the meter wheel.

Gages.— The gages at the coöperative stations are chiefly cypress planks with galvanized staple division marks and brass figures. At the Barge canal stations the original gages were mostly ⅞-inch boards, with painted or burned division marks or figures.

At present most of the gages maintained by the Barge canal department are made in sections from enamelled steel strips, subdivided decimally in $\frac{1}{10}$-foot widths. Weight-and-chain gages have been uniformly equipped with standard chain, standard adjustable weights and standard locks. Tape-and-reel gages, United States Weather Bureau pattern, are also used.

Gages are read each morning and night at most stations, although in some cases readings are taken only once daily. Readings are taken as a rule only to the nearest tenth or half-tenth of a foot. In some cases, where there are two or more gages in a reach of a stream in which the slope is very slight, the mean daily elevation of the downstream gage will on some days be higher than that shown by the upstream gage. These differences are

usually only a very few hundredths of a foot and result from various causes including the error due to reading the gage to nearest tenth foot, change in water-level between the time of reading the two gages, change in slope due to rising or falling of the stream between the two daily readings used in compiling the mean, effect of wind, etc. Instances of this character will be observed where the differences are small and they are not the result either of errors in reading or the use of an erroneous gage datum.

Accuracy of Stream Gagings.— It has not been found practicable to secure an entirely uniform degree of accuracy in the gaging of streams at all the different stations. The methods of gaging by this Department, by the United States Geological Survey and by the Board of Water Supply of the city of New York are substantially uniform. Experience has shown that reasonably accurate results, sufficiently reliable for most purposes for which they are intended, or to which they are applied, can be obtained with a very moderate expenditure per annum at each gaging station.

As a rule the gaging station on a given stream has been selected, first, with reference to securing reliable results, and secondly, with reference to securing these results at moderate cost. Unless there is some special reason why gagings at a specific point are necessary, the site or sites on a given stream which will give the best results at the lowest cost are the ones selected. No attempt has been made in the publication of the results to specify with precision the degree of accuracy attained. Furthermore, the accuracy of the results depends on the form in which they are used. As a rule the mean monthly results are considerably more accurate than the results for a single day.

The object of the gaging records is to determine the quantity of water which flows past the gaging station each day. Most important streams within the state are subject to artificial control by dams and mill ponds in a greater or less degree. No effort is made to determine what the natural regimen of the stream would be if there was no artificial control. The object of the gaging records is to show what the actual flow of the stream is under the existing conditions. In many instances the accuracy

of the results varies according to the size and condition of the stream. As a rule the gaging records during summer months are more accurate than those for the winter season, when the streams are more or less frozen and obstructed by ice. At some gaging stations it is possible to obtain more accurate records at ordinary and low stages than can be obtained at flood stages of the stream, whereas at others the difficulties encountered in securing accurate records in low water are greatest and the published results are most reliable for the higher stages of the stream. As a rule sufficient data are given in connection with the description of each gaging station to enable a fair estimate of the accuracy of the results to be made, but it is not practicable within the limits of this report to give in detail all the conditions affecting the results at different stages of the stream or at different times. Those who are familiar with the difficulties encountered in obtaining a continuous daily record of the flow of a stream will realize that in any event absolute precision in gaging records is not obtainable and, furthermore, that the cost of obtaining a record of the flow of a stream within 1 or 2 per cent error will, as a rule, be greater than to obtain a daily record of the flow of the stream with a possible error of 5 or 10 per cent.

The degree of accuracy obtainable varies greatly according to the character and condition of the stream. New York streams, as a rule, fluctuate within wide limits. The same degree of accuracy obtainable in gaging of mill canals and flumes, where the flow is substantially constant, is not to be expected, nor is it obtainable, as a rule, in gaging streams, the volume of which may be at certain times twenty or thirty fold as great as at other times.

Records of Water-surface Elevations.— These records of water-surface elevation are of fundamental importance in connection with the Barge canal work. In view of various inquiries received relative to these gaging records, it appears proper to state that many of these stations are maintained for the purpose of securing water-surface elevations only, and no effort is being made or will be made to secure data of discharge. Many of the gages are maintained exclusively for obtaining water-surface elevations and are located at situations where it would not be practicable to

secure data of discharge, if it were so desired. In this connection it may be stated that at the time most of these water-surface gages were established final precise levels connecting the elevation of the datum of each gage were not available at all stations. The records published have been referred to tide-water elevation as nearly as determined and occasionally corrections and republication have been necessary, as more accurate elevations have been obtained.

ACKNOWLEDGMENT.

Acknowledgment should be made to Mr. J. Waldo Smith, Chief Engineer, Board of Water Supply of the city of New York, who has furnished the records of Catskill streams, with permission to publish these records in this report. Acknowledgment is also due to several corporations and individuals for data furnished.

The computations of records furnished by the United States Geological Survey in coöperation with this Department, have been made by Mr. C. C. Covert, District Engineer of the Water Resources Branch of the United States Geological Survey.

ST. LAWRENCE RIVER DRAINAGE.

GENERAL FEATURES.

St. Lawrence river receives the flow of a number of New York streams having their sources in a northerly slope of the Adirondacks and fed by the numerous lakes with which the region is dotted. Some of these rivers, as the Grass, Raquette and St. Regis, lie entirely within the United States; others, notably Salmon, Trout, Chateaugay and English rivers, cross the international boundary and flow northward into the St. Lawrence in Canada, as does also Richelieu river, the outlet of Lake Champlain. The following table gives a list of the principal tributaries of the St. Lawrence in the United States, with the areas drained by them determined chiefly from Bien's Atlas of the State of New York.

Drainage Areas of St. Lawrence River Tributaries in the United States.

	Square miles.		Square miles.
Oswegatchie river	1,609	Salmon river *a*	273
Grass river	637	Trout river *b*	129
Raquette river	1,219	Chateaugay river *b*	199
St. Regis river	910	English river *b*	53
Little Salmon river *a*	103	Lake Champlain *c*	7,867

a Above junction near international boundary. *b* At New York state line. *c* Above outlet.

The St. Lawrence drains, through Lake Champlain, an area of 4,560 square miles in the State of Vermont. This drainage is practically all from Missisquoi, Lamoille and Winooski rivers and Otter creek.

LAKE CHAMPLAIN DRAINAGE BASIN.

DESCRIPTION OF BASIN.

Lake Champlain occupies a long and narrow valley, extending in a north-south direction and forming a part of the boundary between New York and Vermont. The elevation of the lake is about ninety-five feet above tide and the water-surface area is 436 square miles.

The drainage basin is irregular in form, being about seventy-five miles wide from a point opposite Middlebury, Vt., northward to the outlet of the lake at Rouses Point, on the international boundary. South of Middlebury the average width of the basin is about thirty-five miles and the lake itself is very narrow, forming virtually a drowned river.

The tributary region is rugged and mountainous, mostly covered with forest and with little depth of soil except in the stream valleys. The drainage is received almost entirely through large tributaries, there being little direct coast drainage into the lake. The outlet of the lake is Richelieu river, which flows northward from Rouses Point to St. Lawrence river.

In estimating the run-off from this basin in previous years the drainage area has been taken as 7,750 square miles. Maps have recently become available from which the area of the lake and its tributary drainage basin have been more accurately determined, as shown in the following table:*

* Table here presented is a revision of that appearing in the 1907 report.

Drainage Areas Tributary to Lake Champlain.

LOCALITY.	AREA IN SQUARE MILES.		
	Place to place.	Sub-total.	Total.
Pike river and adjacent area in Canada	....	*a*242.0	....
Missisquoi river in Canada	....	*b*245.0	....
Land area in Canada above outlet	....	....	487.0
Missisquoi river in Vermont	....	*b*615.0	....
(Total Missisquoi river, 860 square miles.)			
Lamoille river	....	*b*725.0	....
Winooski river	....	*b*995.0	....
Otter creek	....	*b*935.0	....
Eastern coast drainage	....	*b*534.4	....
Mettawee, Poultney and Castleton rivers in Vermont	....	*c*376.0	....
Land area in Vermont, except islands	....	....	4,180.4
Wood creek above Smiths Basin	18.6	....	....
Big creek above junction with Wood creek	35.16	53.76	....
Wood creek, Smiths Basin to Fort Ann	9.9	63.66	....
Halfway creek above Kane's falls	78.82	....	....
Halfway creek, Kane's falls to junction with Wood creek at Fort Ann	6.69	85.51	....
Wood creek at Fort Ann, including Halfway creek	....	149.17	....
Wood creek, Fort Ann to junction with Mettawee	55.73	204.90	....
Mettawee river in Vermont	151.9	....	....
Mettawee river in New York	55.7	....	....
Total, Mettawee river	....	207.6	....
Total, Wood creek and Mettawee river at junction	....	412.5	....
Wood creek junction Mettawee river to Whitehall	13.65	426.15	....
Wood creek, Whitehall to junction with Poultney river	1.65	427.8	....
Castleton river, in Vermont	100.9	....	....
Poultney river, including Castleton river in Vermont	....	254.8	....
Poultney river in New York	....	11.0	....
Poultney river, total to junction with Wood creek	....	265.8	....
Total, Wood creek and Poultney river at junction	....	....	693.6
Wood creek, Mettawee and Poultney rivers in New York	....	....	286.9
Lake George outlet	....	220.1	....
Bouquet river	....	*c*268.1	....
Ausable river	....	*d*521.3	....
Little Ausable river	....	*d*75.1	....
Saranac river	....	*d*629.6	....
Little Chazy river	....	*c*63.8	....
Big Chazy river	....	*d*299.4	....
Western coast drainage	....	*d*344.6	....

a From maps of Canadian Geological Survey. Scale: 1 inch = 4 miles.
b United States post-route maps. Scale: 1 inch = 12.5 miles.
c Topographic maps of U. S. G. S. Scale: 1 inch = 1 mile (nearly).
d Bien's Atlas of New York. Scale: 1 inch = 2.5 miles.

Lake Champlain Drainage—(Continued).

LOCALITY.	AREA IN SQUARE MILES.		
	Place to place.	Sub-total.	Total.
Land area in New York, except islands	....	....	2,708.9
Islands in New York	....	e55.2	....
Total land area above outlet	....	....	7,431.5
Water-surface in Canada	....	e16.5	....
Water-surface in United States	....	e419.1	....
Total water-surface	....	435.6	....
Total drainage area above outlet	....	....	7,867.1
Richelieu river, Rouses Point to Chambly	a310.0	....	....
Total drainage area above Chambly	....	....	8,177.1
Richelieu river, Chambly to mouth	a626.3	....	....
Richelieu river, total	....	936.3	....
Total drainage area above mouth	....	....	8,803.4

a From maps of Canadian Geological Survey. Scale: 1 inch=4 miles.
e Charts of U. S. Coast and Geodetic Survey. Scale: 1:40,000.

RICHELIEU RIVER AT FORT MONTGOMERY, ROUSES POINT, N. Y.

A record of the height of Lake Champlain at Rouses Point, at the head of Richelieu river, the outlet of the lake, has been kept at Fort Montgomery, by the United States Corps of Engineers, beginning in 1875. Through the courtesy of Capt. Harry Taylor, the gage readings taken by William McComb, the fort keeper, at 9 A. M. each day, are reported weekly to the United States Geological Survey.

The depth of the water is taken on a reference mark on the base of the scarp wall, at the north face of bastion B, about three feet from the angle with the east curtain of Fort Montgomery. This reference point is 1.50 feet above an assumed zero, and 1.50 is added to the measured depth to determine the gage reading. In winter the depth as the water rises in a hole in the ice is commonly taken. On windy days the depth is taken in a well within the fort inclosure by measuring the depth on a flagstone in the bottom of the well.

Elevations at Fort Montgomery.	Feet above tide.
Elevation of reference point on scarp wall of Fort Montgomery a	94.998
Elevation of gage zero	93.501
Assumed high water, Lake Champlain	102.611
Assumed low water, Lake Champlain	93.361

a United States Deep Waterways report, part 1, p. 429.

The range of rise and fall of the lake is thus seen to be 9.25 feet, representing an available storage volume of about six inches on the entire catchment area above the outlet.

The land drainage area above Rouses Point is 7,432 square miles. The water-surface of the lake is 436 square miles, making the total area at the foot of the lake 7,868 square miles.

The daily discharge of the lake has been determined from observations of the depth and discharge over the Chambly dam, thirty-five miles below the head of Richelieu river, made in 1898 by the United States Board on Deep Waterways. A rating table has been derived from the observations at the Chambly dam and the gage readings taken at Rouses Point. The area tributary to the river between Rouses Point and Chambly is 310 square miles, making the total drainage basin above Chambly, 8,177 square miles. The publication of discharge estimates at this station for the years 1907–11 has been withheld pending the acquisition of additional data to check and if necessary revise the rating table heretofore used.

Mean Daily Gage Height, in Feet, of Richelieu River at Fort Montgomery, Rouses Point, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	93.90	94.30	94.20	95.30	96.10	93.75	92.05	91.10	90.55	90.50	90.80	91.40
2.....	93.95	*a*	94.15	95.30	96.00	93.55	92.05	91.10	90.70	90.40	90.80	91.40
3.....	93.95	94.40	94.10	95.35	96.00	93.50	92.00	91.15	90.45	90.45	90.95	91.30
4.....	94.05	94.45	94.10	95.30	96.10	93.45	91.95	91.10	90.45	90.95	91.00	91.40
5.....	94.35	94.35	94.05	95.40	96.15	93.40	91.90	91.00	90.50	90.45	90.95	91.50
6.....	94.25	94.40	94.05	95.45	96.00	93.30	92.00	90.95	90.65	90.35	90.95	91.40
7.....	94.35	94.40	94.10	95.80	95.85	93.20	91.75	90.95	90.45	90.45	91.00	91.40
8.....	94.45	94.35	94.05	96.30	95.85	93.15	91.80	91.10	90.45	90.65	90.90	91.35
9.....	94.40	94.35	94.10	96.40	95.70	93.05	91.75	90.90	90.70	90.55	90.90	91.50
10.....	94.45	94.30	94.05	96.65	95.55	93.00	91.80	90.85	90.50	90.55	91.20	91.50
11.....	94.60	94.30	94.00	97.00	95.55	93.00	91.65	90.75	90.50	90.60	91.00	91.65
12.....	94.35	94.35	94.05	97.20	95.50	93.15	91.65	90.75	90.40	90.55	91.40	91.45
13.....	94.50	94.30	94.00	97.30	95.30	93.10	91.55	90.80	90.40	90.50	90.95	91.55
14.....	94.45	94.25	94.05	*a*	95.30	92.95	91.60	90.75	90.45	90.55	91.00	91.75
15.....	94.40	94.35	94.05	*a*	95.40	92.90	91.50	90.75	90.90	90.60	91.00	91.95
16.....	94.45	94.25	94.10	*a*	95.00	92.80	91.65	90.65	90.50	90.50	90.90	91.95
17.....	94.40	94.30	94.15	*a*	95.00	92.75	91.60	90.65	90.40	90.60	91.00	92.05
18.....	94.50	94.25	94.20	*a*	94.90	92.80	91.40	90.75	90.45	90.70	90.90	92.15
19.....	94.55	94.30	94.25	95.65	94.80	92.75	91.40	90.60	90.50	90.65	91.15	92.20
20.....	94.40	94.25	94.25	95.75	94.90	92.65	91.50	90.60	90.40	90.70	91.10	92.30
21.....	94.45	94.20	94.25	95.80	94.70	92.55	91.40	90.70	90.45	90.80	91.05	92.25
22.....	94.35	94.20	94.20	95.85	94.50	92.60	91.30	90.90	90.45	90.85	91.10	92.50
23.....	94.35	94.25	94.25	95.80	94.40	92.40	91.25	90.45	90.50	90.85	91.40	92.30
24.....	94.35	94.20	94.25	95.80	94.50	92.40	91.45	90.65	90.65	90.95	91.15	92.50
25.....	94.30	94.25	94.30	95.70	94.20	92.50	91.45	90.60	90.40	91.00	91.10	92.70
26.....	94.30	94.25	94.35	95.75	94.20	92.40	91.20	90.65	90.45	90.90	91.20	92.75
27.....	94.30	94.20	94.50	95.80	94.10	92.45	91.15	90.65	90.70	91.00	91.20	93.20
28.....	94.25	94.20	94.65	95.75	94.10	92.30	91.10	90.70	90.40	91.00	91.40	92.70
29.....	94.45	......	94.85	95.85	93.90	92.10	91.25	90.50	90.50	91.15	91.50	92.80
30.....	94.30	......	95.05	95.90	93.80	92.10	91.15	90.50	90.40	90.80	91.40	92.75
31.....	94.30	......	95.20	......	93.70	......	91.10	90.55	......	90.95	......	92.80

a Record missing.
NOTE.— Uncertainty exists in regard to these gage heights; the table is tentative only and is subject to revision.

SARANAC RIVER.

DESCRIPTION.

Saranac river rises in southeastern Franklin county, and flows northeastward to a point near Cadyville and thence eastward into Lake Champlain at Plattsburg. The southern boundary of the basin is the Ampersand mountain range, and the stream drains the north slope of the most elevated region of the state of New York. About 16.2 per cent of the upper drainage area is water-surface. The areas tributary to the river are shown in the following table:

Drainage Areas of Saranac River. a

LOCATION.	Area.	Total area.
	Square miles.	*Square miles.*
Above Saranac lake State dam	....	157.5
Above Saranac Lake village	44.9	202.4
Above Franklin Falls	104.3	306.7
North Branch Saranac river	136.6	136.6
At junction North branch	....	498.8
Above High Falls	19.6	518.4
Above Cadyville	74.6	593.0
Above Kent Falls	2.9	595.9
Above Morrisonville	2.0	597.9
Above Lozier dam	26.1	624.0
Above mouth	5.6	629.6

a From Bien's Atlas of New York.

The results of gagings of Saranac river at a station formerly maintained at Saranac lake are given in the report of the State Engineer and Surveyor for 1903, supplement, pages 71–74.

In 1854 a timber dam was built below lower Saranac lake for the purpose of flooding logs. In 1899–1901 a masonry dam and lock were erected by the State at this point.

SARANAC RIVER NEAR PLATTSBURG, N. Y.

A gaging station was established by Robert E. Horton at the dam of the Plattsburg Light, Heat and Power Company, six miles above Plattsburg, March 17, 1903. This station is maintained by the U. S. Geological Survey in coöperation with this Department.

The record includes the flow over a straight spillway crest 171.25 feet in length, the discharge through two five-foot waste gates when open, and the discharge through five thirty-three-inch Victor turbines controlled by automatic governors. The gages

were read and the record furnished by A. E. Hare until January, 1907; since then the record has been furnished by the company. Experiments were made at Cornell University hydraulic laboratory on a model of the ogee section of the dam, from which coefficients have been derived for the calculation of the discharge.[a]

Current-meter measurements have been made in the tail-race to calibrate the turbines.

Discharge records at this station for 1911 are not available at present.

WOOD CREEK DRAINAGE BASIN.

DESCRIPTION.

Wood creek flowed originally along a tortuous course in a flat valley skirted by bold slopes, the general course being northerly from a point five miles east of Hudson river at Fort Edward. From Smiths Basin northerly, it is alternately paralleled by and canalized to form Champlain canal, so that the flow of this portion of the stream is artificially controlled.

Half Way creek, the principal tributary of Wood creek, from the west, enters at Fort Ann. This stream receives the drainage from Putnam mountain and an adjacent group of small lakes. A fall of 60 feet occurs at Kanes Falls. Wood creek is joined by Mettawee river a short distance above Whitehall. The drainage from Poultney and Castleton rivers enters the arm of Lake Champlain through which Wood creek flows below Whitehall.

WOOD CREEK BELOW DAM AT WHITEHALL, N. Y.

A gage has been maintained by this Department below the dam at Whitehall since January 22, 1905. This gage gives a record of the fluctuation in level of water in the arm of Lake Champlain into which Wood creek discharges.

The original gage, erected by Mr. D. B. LaDu, was attached to the face of the Champlain Silk Mill on the right-hand side of the stream below the dam. A new gage attached to the face of the timber docking below the dam on the left-hand side of the stream is now used. The zero mark of each gage is at elevation 73.0, Barge canal datum.

[a] Horton. "Weir experiments, coefficients and formalus."

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Wood Creek (b) below Dam at Whitehall, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	95.75	95.95	95.65	96.45	*a*	97.65	95.80	95.20	94.25	94.45	94.00	94.20
2	95.80	96.00	95.70	96.55	*a*	97.45	95.75	95.15	94.20	94.50	94.05	94.25
3	95.75	96.05	95.65	96.65	*a*	97.35	95.70	95.10	94.25	94.30	94.00	94.30
4	95.65	96.05	95.55	96.85	*a*	97.25	95.70	95.20	94.20	94.20	94.05	94.25
5	95.60	95.95	95.65	96.95	*a*	97.00	95.60	95.10	93.95	94.05	94.15	94.25
6	95.65	95.90	95.55	97.35	*a*	96.90	95.70	95.15	94.10	93.95	94.25	94.25
7	95.65	95.85	95.60	98.10	*a*	96.85	95.80	95.10	94.15	94.15	94.25	94.25
8	95.55	96.00	95.45	98.65	*a*	96.75	95.65	95.00	94.25	94.25	94.25	94.25
9	95.65	95.90	95.40	98.75	*a*	96.60	95.60	95.00	94.25	94.25	94.45	94.35
10	95.65	95.95	95.45	98.65	*a*	96.60	95.65	94.90	94.25	94.15	94.25	94.35
11	95.65	95.90	95.55	98.55	*a*	96.50	95.65	94.95	94.35	94.05	94.20	94.35
12	95.60	95.85	95.55	98.55	*a*	96.45	95.65	94.95	94.30	94.15	94.25	94.35
13	95.65	95.75	95.45	98.60	*a*	96.25	95.55	94.95	94.35	94.25	94.30	94.35
14	95.55	95.65	95.50	98.70	*a*	96.20	95.50	94.90	94.10	94.20	94.25	94.45
15	95.60	95.60	95.55	98.95	*a*	96.10	95.45	94.95	94.00	94.15	94.25	94.45
16	95.55	95.50	95.45	*a*	*a*	96.15	95.60	95.05	94.10	94.15	94.20	94.40
17	95.55	95.55	95.40	*a*	*a*	96.10	95.65	95.00	94.15	94.05	94.15	94.35
18	95.60	95.55	95.35	*a*	99.00	96.05	95.55	95.05	94.25	94.35	94.35	94.40
19	95.50	95.45	95.40	*a*	98.95	96.00	95.50	95.05	94.30	94.95	94.45	94.45
20	95.45	95.40	95.55	*a*	98.85	96.00	95.40	95.00	94.25	95.45	94.45	94.60
21	95.40	95.35	95.70	*a*	98.75	95.95	95.40	94.90	94.15	95.20	94.35	94.90
22	95.40	95.40	95.65	*a*	98.70	95.90	95.25	94.80	94.25	95.10	94.30	95.25
23	95.45	95.35	95.80	*a*	98.60	95.95	95.10	94.65	94.15	94.90	94.25	96.05
24	95.45	95.45	95.75	*a*	98.45	95.90	95.00	94.60	94.10	94.75	94.25	96.55
25	95.45	95.45	95.95	*a*	98.10	96.00	95.15	94.65	94.20	94.55	94.25	96.45
26	95.45	95.45	96.30	*a*	97.95	95.90	95.25	94.55	94.25	94.30	94.25	96.40
27	95.55	95.55	96.60	*a*	97.95	95.85	95.35	94.55	94.05	94.20	94.30	96.85
28	95.70	95.60	97.80	*a*	98.00	95.85	95.40	94.60	94.20	94.05	94.20	96.65
29	95.85	......	98.80	*a*	97.80	95.80	95.45	94.65	94.25	94.05	94.30	96.45
30	96.00	......	97.65	*a*	97.70	95.80	95.30	94.55	94.40	94.00	94.20	96.40
31	96.05	......	96.60	......	97.65	......	95.25	94.45	......	94.05	......	96.45

a Above gage; no record. *b* Arm of Lake Champlain.

RAQUETTE RIVER.

DESCRIPTION.

Raquette river drains a long, narrow basin extending from northern Hamilton county to St. Lawrence river. Its sources are on an elevated plateau, dotted with mountains interspersed with lakes. The region is timbered, but numerous marsh and swamp areas exist, many of which are on the divide and feed streams flowing in opposite directions. The lakes of the head waters afford ample opportunities for storage development.

RAQUETTE RIVER AT MASSENA SPRINGS, N. Y.

A gaging station was established by Robert E. Horton at the highway bridge at Massena Springs, September 21, 1903. Observations were continued until October 17, 1903, when the station was temporarily abandoned. It was resumed April 9, 1904, and has since been maintained by the U. S. Geoolgical Survey in coöperation with this Department.

The channel is straight for 300 feet above and 1,000 feet below the bridge, which consists of a single span of 167.5 feet. The

banks are not subject to overflow. The current is swift and uniform.

Discharge measurements are made from the downstream side of the Massena Springs highway bridge. The initial point for soundings is the top of the right bridge abutment on the upstream side of the bridge.

The gage consists of a vertical scale attached to the right abutment on the upstream side of the bridge. The bench-mark is a cross painted on the outside downstream corner of the foundation adjacent to the sulphur springs; elevation above gage datum, 12.21 feet. The Sunday flow of this stream, like many others in this state, is often held back during the low-water season, while ponds at mills above are being refilled. Where there is extensive pondage of this character, the resultant effect may be shown in the stream for several days.

Mean Daily Gage Height, in Feet, of Raquette River at Massena Springs, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
911.												
1	4.60			5.90	8.40	5.60	3.60	1.80	1.75	2.80	3.70	5.40
2					9.20	5.50	3.30	2.05	2.05	3.80	3.35	5.20
3					9.40	5.60	3.00	1.85	1.70	3.50	3.90	4.80
4			4.60		9.40	5.20	3.00	1.75	1.80	3.20	3.90	6.20
5		4.70			9.20	5.20	3.00	1.50	1.75	3.20	3.70	6.50
6					9.00	4.80	3.40	1.65	2.00	3.10	3.25	5.80
7	4.50				8.80	4.80	3.20	1.80	1.85	3.60	3.90	6.10
8				10.50	9.00	4.60	2.80	1.85	1.75	3.40	4.00	5.20
9					8.70	4.40	2.25	2.00	1.80	3.70	4.70	5.00
10					8.40	4.60	2.20	1.85	2.80	4.30	4.30	5.00
11			4.80		8.00	4.00	3.00	1.75	1.80	3.60	4.40	5.40
12		4.70		9.40	7.80	4.40	3.10	1.55	3.35	3.60	4.40	5.60
13				9.20	7.40	4.40	2.80	1.75	3.30	3.00	3.60	5.70
14				8.60	7.20	4.60	1.85	1.75	3.10	3.60	4.20	7.10
15	4.50			8.20	6.90	4.40	1.75	1.85	3.25	2.95	4.40	7.00
16				8.00	6.70	4.40	1.75	1.85	3.85	2.80	4.00	7.10
17				8.00	6.60	4.30	2.00	2.05	3.85	3.30	4.20	6.80
18			5.10	7.60	6.40	4.20	3.10	1.82	2.90	3.40	4.70	6.80
19		4.60		7.40	6.30	4.40	2.70	1.75	3.15	3.60	5.10	5.80
20				7.40	6.20	4.00	2.60	1.75	3.30	3.30	5.50	5.70
21				7.40	5.80	4.10	2.50	1.45	3.15	3.30	5.20	5.60
22	4.40			7.40	5.60	4.10	2.80	1.55	2.90	3.35	4.80	5.40
23				7.20	5.35	4.10	1.90	1.85	2.85	3.25	4.80	5.80
24				7.20	5.40	4.00	1.55	1.90	2.90	3.60	4.60	6.00
25		4.70	5.30	7.10	7.60	3.60	1.70	1.95	3.10	3.80	5.20	6.00
26				7.20	7.60	3.80	2.45	1.90	3.50	3.60	5.00	6.00
27				7.60	7.00	3.80	2.35	1.70	3.10	3.40	4.60	5.60
28				7.80	6.40	3.80	2.00	1.60	2.90	3.80	4.80	5.60
29	4.40			8.00	6.30	3.70	1.85	1.75	3.00	3.60	4.80	7.70
30				8.10	6.00	3.65	1.65	1.75	2.85	3.90	4.90	8.80
31					5.80		1.65	1.85		3.80		8.60

NOTE.— Relation of gage height to discharge, affected by ice from January 1 to about April 16, and from about December 29 to 31. Gage heights are to water-surface, except those for January 1 and 7, which are to the top of the ice.

From about July 1 to December 13 the gage heights read from the chain gage were affected by construction work at the new bridge. Some uncertainty also exists regarding the gage heights from December 19 to 31, owing to the possibility of a permanent change in the relation of gage height to discharge, caused by the construction work at the bridge, which was completed on December 13. All gage readings were taken on the chain gage, except for the periods September 12 to December 3 and December 7 to 18, when they were read from a temporary staff gage established on the railroad bridge below the bridge to which the chain gage is attached.

Current-meter Discharge Measurements of Raquette River at Massena Springs, N. Y.

DATE.	Hydrographer.	Mean gage reading.*	Total area.	Total width.	Discharge.
1911.		*Feet.*	*Square feet.*	*Feet.*	*Second-feet.*
Feb 20 *a*..	W. G. Hoyt....................	4.48	416	170	969
April 12 *b*..	C. S. De Golyer..................	9.51	1,680	174	4,790
July 3...	G. H. Canfield...................	2.79	470	170	1,050
Sept. 8...	G. H. Canfield...................	1.80	300	167	387
Sept. 11...	G. H. Canfield...................	*c*1.84	304	163	406
Sept. 12...	G. H. Canfield...................	*d*2.66	454	172	868
Sept. 12...	G. H. Canfield...................	*e*2.30	328	129	612
Nov. 22...	C. S. De Golyer..................	*f*4.93	741	172	1,780

* Chain gage. *a* Measurement made under complete ice cover; gage height to top of ice, 4.58 feet; average thickness of ice, 2.24 feet. *b* Open water at bridge. Ice jammed below and above, causing backwater. *c* Gage height, staff gage, 2.84 feet. *d* Gage height, staff gage, 3.64 feet. *e* Gage height, staff gage, 3.30 feet. *f* Gage height, staff gage, 4.99 feet.

Mean Daily Discharge, Second-feet, of Raquette River at Massena Springs, N. Y.

DAY.	Jan.	Feb.	Mar.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	......	......	......	......	7,160	3,680	1,660	465	365	385	875	2,200
2	......	......	......	......	8,350	3,580	1,420	592	505	945	662	2,020
3	......	......	......	......	8,650	3,680	1,200	490	345	750	1,020	1,690
4	......	......	......	......	8,650	3,280	1,200	442	385	580	1,020	3,650
5	......	......	......	......	8,350	3,280	1,200	335	365	580	875	4,000
6	......	......	......	......	8,050	2,880	1,500	398	480	530	608	3,250
7	......	......	......	......	7,750	2,880	1,350	465	408	810	1,020	2,900
8	......	......	......	......	8,050	2,700	1,060	490	365	690	1,020	2,020
9	......	......	......	......	7,600	2,500	705	565	385	875	875	1,850
10	......	......	......	......	7,160	2,700	675	490	945	1,300	1,300	1,850
11	......	......	......	......	6,590	2,140	1,200	442	385	810	1,380	2,200
12	......	......	......	4,800	6,310	2,500	1,280	355	662	810	1,380	2,400
13	......	......	......	5,000	5,780	2,500	1,060	442	635	480	810	2,500
14	......	......	......	5,500	5,520	2,700	490	442	530	810	1,230	4,040
15	......	......	......	6,000	5,150	2,500	442	490	608	455	1,380	3,920
16	......	......	......	6,200	4,910	2,500	442	490	980	385	1,080	4,040
17	......	......	......	6,590	4,790	2,420	565	592	980	635	1,230	3,680
18	......	......	......	6,040	4,560	2,320	1,280	475	430	690	1,610	3,680
19	......	......	......	5,780	4,440	2,500	990	442	555	810	1,940	3,680
20	......	......	......	5,780	4,330	2,140	925	442	635	635	2,300	3,560
21	......	......	......	5,780	3,890	2,240	860	315	555	635	2,020	3,450
22	......	......	......	5,780	3,680	2,240	1,060	355	430	662	1,690	3,230
23	......	......	......	5,520	3,420	2,240	515	408	408	608	1,690	3,680
24	......	......	......	5,520	3,480	2,140	355	430	430	810	1,530	3,920
25	......	......	......	5,400	6,040	1,800	420	455	530	945	2,020	3,920
26	......	......	......	5,520	6,040	1,960	828	430	750	810	1,850	3,920
27	......	......	......	6,040	5,270	1,960	765	345	530	690	1,530	3,450
28	......	......	......	6,310	4,560	1,960	565	305	430	945	1,690	3,450
29	......	......	......	6,590	4,440	1,880	490	365	480	810	1,690	3,300
30	......	......	......	6,730	4,110	1,840	398	365	408	1,020	1,770	3,200
31	......	......	......	......	3,890	......	398	408	......	945	......	3,000

NOTE.— Daily discharge determined by means of four discharge rating curves: (1) A well-defined curve, used during 1910, applicable for the open-water period until June 30; (2) a rating curve based on a measurement made July 3, applicable July 1 to August 22, curve only fairly well defined and period of application uncertain; (3) a well-defined curve constructed from four measurements made during September, and applicable, though with some uncertainty regarding the period, from August 23 to September 11, and (4) a well-defined curve constructed from measurements made during September and November and applicable to the staff gage readings September 12 to December 3 and December 7 to 18, also applicable to chain gage readings December 4 to 6 and December 19 to 31, with a correction of 0.6 foot for December 4 to 6 and 1.0 foot for December 19 to 31.

Daily discharge May 13 to 16 and December 29 to 31 estimated.

Monthly Discharge of Raquette River at Massena Springs, N. Y.
[Drainage area, 1,170 square miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	....	....	690	0.590	0.68
February	....	....	960	0.820	0.85
March	6,310	....	4,040	3.45	3.98
April	5,520	2,980	4,560	3.90	4.35
May	4,110	2,460	3,210	2.74	3.16
June	3,080	1,350	2,390	2.04	2.28
July	1,590	433	770	0.658	0.76
August	1,160	284	538	0.460	0.53
September	1,060	284	66	0.569	0.63
October	1,590	388	926	0.791	0.91
November	1,630	457	1,210	1.03	1.15
December	....	....	660	0.564	0.65

NOTE.— Discharge for January, February and December estimated from the discharge at Piercefield.
This table supersedes that for 1910, published on page 325 in the State Engineer's report for 1910.

Monthly Discharge of Raquette River at Massena Springs, N. Y.
[Drainage area, 1,170 square miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	....	....	1,400	1.20	1.38
February	....	....	1,200	1.03	1.07
March	....	....	1,350	1.15	1.33
April	6,730	....	4,800	4.10	4.57
May	8,650	3,420	5,840	4.99	5.75
June	3,680	1,800	2,520	2.15	2.40
July	1,660	355	881	0.753	0.87
August	592	305	436	0.373	0.43
September	980	345	530	0.453	0.51
October	1,300	385	737	0.630	0.73
November	2,300	608	1,370	1.17	1.30
December	4,040	1,690	3,150	2.69	3.10
The year	8,650	305	2,020	1.73	23.44

NOTE.— Discharge Jan. 1 to Apr. 11, determined from the discharge at Piercefield, plus an inflow between Piercefield and Massena Springs, estimated from consideration of general conditions affecting run-off in northern New York.
Mean discharge, Apr. 1 to 11, is estimated at 3,000 second-feet.

RAQUETTE RIVER AT PIERCEFIELD, N. Y.

A gaging station was established August 20, 1908, by the U. S. Geological Survey in coöperation with the State Water Supply Commission at a point about one-half mile downstream from the dam of the International Paper Company at Piercefield. The gaging station is located at the head of Black rapids. There the

stream is confined to a single channel at all stages and there is sufficient current to afford good opportunity for measurements in ordinary and high stages but the stream becomes sluggish in low water. Current-meter measurements are made from a boat held in position by a wire stretched across the stream, at ordinary and low stages. During high water the measurements are made at the highway bridge crossing the pond a short distance above the dam of the Paper Company. The stream was little obstructed by ice at the gaging station and the rating curve deduced for open water conditions is utilized in calculating discharge throughout the entire year. The observer is W. B. Graves. The records here published have been compiled from the reports of the New York State Conservation Commission.

The records at this station for 1911 are not available at present.

Mean Daily Discharge, Second-feet, of Raquette River at Piercefield, N. Y.

DAY.	Jan.	Feb.	Mar.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1	487	735	635	3,820	3,980	......	2,020	369	456	521	635	675
2	218	715	755	4,720	3,980	......	1,680	316	426	218	667	595
3	487	715	755	4,720	3,980	......	218	316	397	303	675	595
4	472	715	755	4,780	4,040	......	218	290	90	521	707	90
5	480	715	755	4,780	4,040	......	1,160	316	90	539	675	528
6	487	342	441	4,840	3,870	......	1,000	316	441	521	101	576
7	472	675	1,080	4,780	3,760	......	845	90	528	539	356	557
8	456	765	1,600	4,780	3,560	......	575	90	521	557	576	487
9	241	715	1,600	4,780	3,560	......	595	383	539	101	635	456
10	487	715	1,600	4,540	3,560	......	218	487	557	186	920	456
11	487	675	1,600	4,780	3,560	......	521	90	90	412	735	90
12	487	675	1,600	4,780	3,500	......	557	90	1,020	521	778	90
13	715	635	1,220	4,780	3,450	......	472	90	595	504	90	521
14	715	755	2,020	4,660	3,050	......	557	90	472	521	397	504
15	487	755	2,020	4,540	2,600	......	487	90	412	487	920	487
16	241	755	2,060	4,320	2,750	......	456	90	456	101	995	487
17	356	755	2,060	3,980	2,700	......	218	90	369	504	970	356
18	472	755	2,060	3,920	2,650	......	487	218	105	557	920	90
19	426	755	2,020	4,090	2,560	......	487	539	557	615	945	342
20	487	755	1,900	3,560	2,290	......	504	383	557	635	90	487
21	487	755	1,900	3,660	2,560	......	521	114	557	635	369	456
22	487	755	1,860	3,560	2,750	......	539	90	557	635	635	456
23	218	755	1,780	3,560	2,750	......	557	295	557	101	800	456
24	655	755	1,780	3,050	2,750	......	218	456	557	290	895	456
25	675	755	1,780	4,200	2,750	2,020	412	539	105	504	895	90
26	675	845	2,020	3,980	2,560	1,860	539	504	218	539	945	90
27	675	456	2,290	3,980	2,560	2,020	557	487	303	557	90	450
28	675	456	3,250	4,090	2,560	2,560	557	105	539	603	383	450
29	675	......	3,560	4,090	2,560	2,560	472	90	557	635	635	450
30	521	......	4,090	3,980	2,560	2,020	456	412	521	105	675	450
31	695	......	3,820	......	2,560	......	90	504	......	356	......	450

NOTE.— Daily discharge determined from a well-defined discharge rating curve. During the period Jan. 1 to Mar. 12, when the gage heights were taken to the top of the ice, the discharge rating curve was applied directly, as the ice was less than one-half foot thick and was probably constantly in a state of flotation. Discharge for days on which gage height was recorded as 0 is estimated at 90 second-feet, except Dec. 27 to 31, when the plant of the International Paper Co. is known to have been running. For these days the discharge is estimated at 450 second-feet. The discharge for the period Aug. 11 to 17 is subject to considerable doubt.

This table supersedes that for 1910, appearing on page 323 of the State Engineer's report for 1910.

Monthly Discharge of Raquette River at Piercefield, N. Y.
[Drainage area, 723 square miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	695	218	503	0.696	0.80
February	845	342	700	0.968	1.01
March	4,090	635	1,830	2.530	2.92
April	4,840	3,050	4,270	5.910	6.59
May	4,040	2,290	3,110	4.300	4.96
June	....	....	2,040	2.820	3.15
July	2,020	90	587	0.812	0.94
August	539	90	269	0.372	0.43
September	1,020	90	438	0.606	0.68
October	635	101	446	0.617	0.71
November	995	90	637	0.881	0.98
December	675	90	410	0.567	0.65

NOTE.— Discharge for June estimated from the discharge at Massena Springs.
This table supersedes that for 1910, appearing on page 329 of the State Engineer's report for 1910.

RAQUETTE RIVER AT RAQUETTE FALLS, NEAR COREYS, N. Y.

The gaging station was established at Raquette Falls by the U. S. Geological Survey in coöperation with the State Water Supply Commission, August 27, 1908. The gaging station is located about midlength of Raquette Falls in Harrietstown, about eight miles upstream from the village of Axton. The stream flows in one channel at all stages. The bed is of rock containing large boulders, but permanent in character. The current is sluggish at low stages of the stream, but is suitable for obtaining good gaging results at ordinary and higher stages. A cableway was erected at this station in 1909. Measurements were made, preceding the erection of the cableway, by wading at a cross-section about 2,000 feet downstream. The record is not maintained during the winter season. The observer is C. A. DeLancett. The results of gagings at this station have been compiled from the reports of the New York State Conservation Commission.

Mean Daily Gage Height, in Feet, of Raquette River at Raquette Falls, near Coreys, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	*a*	*a*	*a*	2.9	6.1	4.4	2.8	1.2	1.4	1.6	2.5	3.1
2	*a*	*a*	*a*	2.8	6.3	4.4	2.7	1.2	1.4	1.8	2.5	3.1
3	*a*	*a*	*a*	2.7	6.6	4.3	2.7	1.1	1.3	1.9	2.5	3.0
4	*a*	2.5	2.0	2.7	6.4	4.2	2.6	1.1	1.2	2.0	2.5	3.0
5	*a*	*a*	*a*	2.8	6.2	4.2	2.5	1.1	1.2	2.5	2.5	3.0
6	*a*	*a*	*a*	2.8	6.0	4.2	2.4	1.1	1.2	2.5	2.6	3.0
7	3.4	*a*	*a*	3.1	5.9	4.1	2.3	1.1	2.2	2.5	2.6	3.0
8	*a*	*a*	*a*	3.2	5.7	4.1	2.2	1.1	2.2	2.5	2.7	2.9
9	*a*	*a*	*a*	3.4	5.4	4.0	2.2	1.0	1.9	2.5	2.7	2.9
10	*a*	*a*	*a*	3.4	5.4	3.9	2.1	1.0	1.9	2.5	2.8	2.9
11	*a*	2.2	1.9	3.5	5.3	3.4	2.1	1.1	1.8	2.5	2.8	3.2
12	*a*	*a*	*a*	3.5	5.2	3.4	1.9	1.1	1.8	2.5	2.8	3.5
13	*a*	*a*	*a*	3.6	5.1	3.4	1.8	1.0	2.0	2.4	2.9	4.0
14	3.4	*a*	*a*	3.8	5.0	3.7	1.7	1.0	2.0	2.4	2.9	4.4
15	*a*	*a*	*a*	4.1	4.9	3.7	1.7	1.0	1.9	2.4	3.9	4.4
16	*a*	*a*	*a*	4.4	4.8	3.9	1.6	1.0	1.9	2.4	2.9	4.4
17	*a*	*a*	*a*	4.5	4.8	4.0	1.6	1.0	1.8	2.4	2.9	4.5
18	*a*	2.2	1.8	4.7	4.7	4.0	1.7	1.0	1.8	2.5	3.0	4.4
19	*a*	*a*	*a*	4.7	4.7	3.7	1.8	1.3	1.8	2.6	3.0	4.3
20	*a*	*a*	*a*	4.6	5.0	3.6	1.7	1.3	1.7	2.6	3.0	4.2
21	2.4	*a*	*a*	4.6	4.9	3.5	1.6	1.2	1.7	2.6	3.0	4.2
22	*a*	2.1	*a*	4.6	4.7	3.5	1.5	1.2	1.7	2.7	3.0	4.1
23	*a*	*a*	*a*	4.7	4.7	3.4	1.4	1.2	1.7	2.7	3.1	4.1
24	*a*	*a*	*a*	4.7	5.5	3.4	1.4	1.1	1.7	2.7	3.1	4.1
25	*a*	2.1	2.2	4.8	5.5	3.3	1.4	1.1	1.6	2.7	3.1	4.2
26	*a*	*a*	*a*	4.9	5.1	3.3	1.4	1.1	1.6	2.6	3.0	4.2
27	*a*	*a*	*a*	5.2	4.7	3.3	1.4	1.0	1.6	2.6	3.0	4.3
28	2.2	*a*	*a*	5.4	4.7	3.2	1.4	1.0	1.6	2.6	3.0	4.1
29	*a*	......	*a*	5.4	4.6	3.0	1.3	1.8	1.6	2.5	3.1	4.0
30	*a*	......	*a*	5.9	4.4	2.9	1.3	1.7	1.5	2.5	3.1	3.9
31	*a*	......	*a*	......	4.3	......	1.3	1.5	......	2.5	......	3.7

a No record.

Mean Daily Discharge, Second-feet, of Raquette River at Raquette Falls, near Coreys, N. Y.

DAY.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.											
1	......	300	655	4,220	1,860	600	110	150	190	460	770
2	......	290	600	4,540	1,860	550	110	150	240	460	770
3	......	290	550	5,030	1,750	550	90	130	265	460	710
4	......	290	550	4,700	1,640	505	90	110	290	460	710
5	......	280	600	4,380	1,640	460	90	110	460	460	710
6	......	280	600	4,060	1,640	420	90	110	460	505	710
7	......	270	770	3,900	1,540	385	90	350	460	505	710
8	......	270	830	3,580	1,540	350	90	350	460	550	655
9	......	265	970	3,130	1,450	350	70	265	460	550	655
10	......	265	970	3,130	1,360	320	70	265	460	600	655
11	350	265	1,040	2,980	970	320	90	240	460	600	830
12	350	250	1,040	2,840	970	265	90	240	460	600	1,040
13	350	250	1,120	2,700	970	240	70	290	420	655	1,450
14	350	250	1,280	2,570	1,200	215	70	290	420	655	1,860
15	350	250	1,540	2,440	1,200	215	70	265	420	1,360	1,860
16	350	240	1,860	2,320	1,360	190	70	265	420	655	1,860
17	350	240	1,970	2,320	1,450	190	70	240	420	655	1,970
18	350	240	2,200	2,200	1,450	215	70	240	460	710	1,860
19	340	240	2,200	2,200	1,200	240	130	240	505	710	1,750
20	330	250	2,080	2,570	1,120	215	130	215	505	710	1,640
21	320	260	2,080	2,440	1,040	190	110	215	505	710	1,640
22	320	270	2,080	2,200	1,040	170	110	215	550	710	1,540
23	320	280	2,200	2,200	970	150	110	215	550	770	1,540
24	320	300	2,200	3,280	970	150	90	215	550	770	1,540
25	320	350	2,320	3,280	900	150	90	190	550	770	1,640
26	320	380	2,440	2,700	900	150	90	190	505	710	1,640
27	320	400	2,840	2,200	900	150	70	190	505	710	1,750
28	320	450	3,130	2,200	830	150	70	190	505	710	1,540
29	......	500	3,130	2,080	710	130	240	190	460	770	1,450
30	......	550	3,900	1,860	655	130	215	170	460	770	1,360
31	......	600	......	1,750	......	130	170	......	460	......	1,200

Monthly Discharge of Raquette River at Raquette Falls, near Coreys, N. Y.
[Drainage area, 418 square miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	....	....	250	0.598	0.69
February	....	....	300	0.718	0.75
March	....	....	1,500	3.590	4.14
April	3,740	1,640	2,550	6.100	6.81
May	3,430	1,040	1,980	4.740	5.46
June	1,970	420	1,150	2.750	3.07
July	420	150	226	0.541	0.62
August	290	150	218	0.522	0.60
September	460	190	299	0.715	0.80
October	420	240	304	0.727	0.84
November	460	320	388	0.928	1.04
December	....	....	200	0.478	0.55

NOTE.— Mean discharge for January, February, March and December has been estimated from the discharge at Piercefield and at other stations in northern New York. The determinations are only approximate.

This table supersedes that for 1910, appearing on page 332 of the State Engineer's report for 1910.

Monthly Discharge of Raquette River at Raquette Falls, near Coreys, N. Y.
[Drainage area, 418 square miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	390	350	373	0.892	1.03
February	350	320	341	0.816	0.85
March	600	240	311	0.744	0.86
April	3,900	550	1,660	3.97	4.43
May	5,030	1,750	2,970	7.11	8.20
June	1,860	655	1,240	2.97	3.31
July	600	130	272	0.651	0.75
August	240	70	101	0.242	0.28
September	350	110	216	0.517	0.58
October	550	190	446	1.07	1.23
November	1,360	430	657	1.57	1.75
December	1,970	655	1,290	3.09	3.56

BOG RIVER.

DESCRIPTION.

Bog river is a tributary of Raquette river, which enters the head of Tupper lake. Upper Raquette river enters the easterly arm of Tupper lake. The water-level in Tupper lake is controlled to some extent by the dam of the International Paper Company at Piercefield. The drainage basin of Bog river is shown in part on the Tupper lake quadrangle of the U. S. Geological Survey topographic map. Bog river joins the outlet of Little Tupper lake and Round lake about one and one-half miles upstream from the head of Tupper lake. The drainage basin is all at high altitude, the elevation of Tupper lake being about 1,542 feet and that of Little Tupper lake, 1,718 feet. Bog river is a relatively sluggish, winding stream. Its drainage basin above the junction of Little Tupper lake outlet contains numerous small lakes and ponds. Substantially the entire drainage tributary to Bog river is forest covered, excepting lakes and marsh areas.

BOG RIVER NEAR TUPPER LAKE, N. Y.

A gaging station was established by the U. S. Geological Survey in coöperation with the New York State Water Supply Commission on Bog river below the inflow of Little Tupper lake outlet, August 24, 1908. The gage is located about one mile upstream from the head of Tupper lake. A cableway was erected at the gaging station for the purpose of making discharge measurements during the summer of 1909. Previous measurements were made by wading. The stream is confined to a single channel at all stages. Gage readings were not taken each day during 1909, but were taken at frequent intervals by engineers and observers. The regimen of the stream is controlled to some extent by power development above the gaging station. The results here given have been compiled from the reports of the New York State Conservation Commission.

Mean Daily Gage Height, in Feet, of Bog River near Tupper Lake, N. Y.

DAY.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1911.								
1	......	4.50	3.00	2.00	1.10	1.00	1.30	1.40
2	2.10	4.90	3.00	2.00	1.10	1.00	1.30	1.40
3	2.10	4.90	2.80	1.90	1.00	1.00	1.30	1.40
4	2.20	4.80	2.80	1.80	1.00	1.00	1.30	1.40
5	2.40	4.80	2.80	1.70	1.00	1.00	1.40	1.40
6	2.60	4.70	2.60	1.60	1.00	1.00	1.40	1.50
7	2.70	4.50	2.80	1.60	1.00	1.00	1.50	1.50
8	2.70	4.20	2.80	1.60	1.00	1.00	1.40	1.50
9	2.60	4.00	2.60	1.60	1.00	1.00	1.40	1.50
10	2.90	3.80	2.40	1.50	0.90	1.10	1.40	1.60
11	3.20	3.50	2.40	1.50	0.90	1.20	1.40	1.90
12	3.70	3.20	2.40	1.40	0.90	1.20	1.40	2.40
13	4.00	3.10	2.40	1.40	0.90	1.20	1.40	2.50
14	4.20	3.00	2.50	1.40	0.80	1.20	1.40	2.50
15	4.10	3.00	2.60	1.40	0.80	1.30	1.40	2.50
16	4.10	2.80	2.50	1.40	0.80	1.30	1.40	2.60
17	4.20	2.70	2.40	1.40	0.90	1.30	1.40	2.60
18	4.30	2.60	2.40	1.40	0.90	1.30	1.40	2.70
19	4.30	2.50	2.40	1.40	1.00	1.30	1.50	2.70
20	4.30	2.50	2.50	1.50	1.00	1.30	1.50	2.80
21	4.30	2.40	2.40	1.50	0.90	1.30	1.40	2.80
22	4.20	2.50	2.40	1.40	0.90	1.30	1.40	2.70
23	4.20	2.60	2.60	1.20	0.90	1.30	1.50	2.60
24	4.20	3.00	2.50	1.20	0.90	1.30	1.50	2.60
25	4.30	3.40	2.30	1.20	0.90	1.30	1.50	2.60
26	4.30	3.50	2.20	1.20	0.90	1.30	1.50	2.60
27	4.30	3.40	2.10	1.10	0.90	1.40	1.50	2.70
28	4.30	3.40	2.10	1.10	1.00	1.40	1.40	2.90
29	4.20	3.40	2.10	1.00	1.00	1.40	1.40	3.10
30	4.30	3.20	2.00	1.10	1.00	1.40	1.40	3.10
31	......	3.00	......	1.10	1.00	......	1.40	......

Mean Daily Discharge, Second-feet, of Bog River near Tupper Lake, N. Y.

DAY.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1911.								
1	180	1,260	455	166	37	28	60	72
2	186	1,540	455	166	37	28	60	72
3	186	1,540	375	148	28	28	60	72
4	208	1,470	375	131	28	28	60	72
5	254	1,470	375	115	28	28	72	72
6	310	1,400	310	100	28	28	72	85
7	340	1,260	375	100	28	28	85	85
8	340	1,060	375	100	28	28	72	85
9	310	940	310	100	28	28	72	85
10	415	825	254	85	20	37	72	100
11	535	670	254	85	20	48	72	148
12	770	535	254	72	20	48	72	254
13	940	495	254	72	20	48	72	280
14	1,060	455	280	72	14	48	72	280
15	1,000	455	310	72	14	60	72	280
16	1,000	375	280	72	14	60	72	310
17	1,060	340	254	72	20	60	72	310
18	1,130	310	254	72	20	60	72	340
19	1,130	280	254	72	28	60	85	340
20	1,130	280	280	85	28	60	85	375
21	1,130	254	254	85	20	60	72	375
22	1,060	280	254	72	20	60	72	340
23	1,060	310	310	48	20	60	85	310
24	1,060	455	280	48	20	60	85	310
25	1,130	625	230	48	20	60	85	310
26	1,130	670	208	48	20	60	85	310
27	1,130	625	186	37	20	72	85	340
28	1,130	625	186	37	28	72	72	415
29	1,060	625	186	28	28	72	72	495
30	1,130	535	166	37	28	72	72	495
31	......	455	......	37	28	......	72	......

Monthly Discharge of Bog River at Tupper Lake, N. Y.
[Drainage area, 132 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	....	....	120	0.909	1.05
February	....	....	100	0.758	0.79
March	....	....	120	0.909	1.05
April	1,130	180	783	5.93	6.62
May	1,540	254	723	5.48	6.32
June	455	166	286	2.17	2.42
July	166	28	80	0.607	0.70
August	37	14	24	0.181	0.21
September	72	28	50	0.376	0.42
October	85	60	74	0.559	0.64
November	495	72	247	1.87	2.09
December	....	....	450	3.41	3.93

OSWEGATCHIE RIVER.

DESCRIPTION.

Oswegatchie river has its source in the region of lakes and timbered swamps in the southern part of St. Lawrence county. The largest of the lakes is Cranberry lake, which affords valuable storage to water-power users on its outlet, East branch of Oswegatchie river. East and west branches flow in a general northwesterly direction and unite near Talcville. From Gouverneur to Oxbow the river flows southwestward; it then turns sharply and flows northeastward to Rensselaer Falls, turns again to the northwest, receives the outlet of Black lake at Galilee, and finally enters the St. Lawrence at Ogdensburg.

OSWEGATCHIE RIVER NEAR OGDENSBURG, N. Y.

The gaging station was established May 16, 1903, by Robert E. Horton. It is located at Eel weir bridge, just below the junction of Oswegatchie river and Black lake outlet. This gaging station is maintained by the U. S. Geological Survey in coöperation with this Department.

The channel is in rock and is partly artificial, rock underneath the bridge having been removed by blasting to increase the bridge opening. The bridge consists of two spans, the right being 129.6 feet long and the left 130.1 feet.

Discharge measurements are made from the downstream side of the bridge. The initial point for soundings is the top of the face of the right abutment, downstream side.

A standard chain gage, which is observed twice daily by Joseph H. La Rue is attached to the ironwork of the bridge on the upstream side of the right-hand span. The bench-mark is a square chisel draft on the upstream side of the right-hand abutment; for which an arbitrary elevation of 100.0 is assumed. The datum of the gage is elevation 83.28, or 16.72 feet below the bench-mark.

Mean Daily Gage Height, in Feet, of Oswegatchie River near Ogdensburg, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct	Nov.	Dec.
1911.												
1	5.20	5.70	5.20	8.60	6.30	6.10	5.10	4.50	4.40	4.70	4.90	6.50
2	5.20	5.70	5.20	8.30	6.40	6.00	5.10	4.50	4.40	4.60	4.90	6.50
3	5.30	5.70	5.40	8.10	6.30	5.80	5.10	4.50	4.40	4.60	5.00	6.50
4	5.90	5.70	5.50	8.00	6.40	5.70	5.10	4.50	4.40	4.60	5.00	6.50
5	6.10	5.70	5.40	7.70	6.40	5.70	5.00	4.50	4.40	4.60	5.10	6.40
6	6.50	5.60	5.40	7.80	6.40	5.70	5.00	4.50	4.50	4.70	5.00	6.30
7	6.60	5.60	5.40	8.10	6.40	5.50	4.90	4.50	4.50	4.90	5.10	6.20
8	6.20	5.50	5.30	8.50	6.30	5.60	4.90	4.50	4.60	5.00	5.30	6.20
9	6.40	5.50	5.20	9.10	6.30	5.60	4.90	4.50	4.80	5.00	5.30	6.10
10	6.20	5.50	5.20	9.40	6.10	5.60	4.90	4.40	4.90	5.00	5.50	6.00
11	6.20	5.40	5.10	9.50	5.90	5.70	4.90	4.50	4.90	5.10	5.50	6.00
12	6.10	5.30	5.10	9.40	5.90	5.70	4.80	4.50	4.90	5.10	5.90	6.20
13	6.10	5.20	5.10	9.10	5.80	5.60	4.80	4.50	4.90	5.10	5.70	6.20
14	6.10	5.20	5.10	9.10	5.70	5.50	4.70	4.40	4.90	5.10	5.70	6.60
15	6.10	5.20	5.50	9.10	5.50	5.50	4.70	4.40	5.00	5.10	5.70	7.00
16	6.10	5.10	6.20	9.00	5.40	5.40	4.70	4.40	5.00	5.10	5.70	7.40
17	6.10	5.10	6.60	8.90	5.40	5.30	4.70	4.40	4.90	5.10	5.70	7.40
18	6.00	5.00	6.10	8.50	5.40	5.30	4.70	4.40	4.90	5.10	5.70	7.50
19	6.00	5.00	6.10	8.40	5.40	5.40	4.70	4.40	4.90	5.10	6.00	7.40
20	5.90	5.10	6.00	8.10	5.40	5.30	4.70	4.40	4.90	5.10	6.00	7.20
21	5.80	5.10	6.00	8.10	5.50	5.30	4.70	4.40	4.90	5.00	6.10	7.20
22	5.70	5.10	6.00	8.00	5.60	5.30	4.70	4.40	4.90	5.00	6.10	7.20
23	5.70	5.10	6.10	7.70	5.80	5.30	4.70	4.40	4.90	5.00	6.10	7.00
24	5.70	5.10	6.30	7.50	6.00	5.20	4.70	4.40	4.80	5.00	6.10	6.90
25	5.60	5.10	6.10	7.30	6.00	5.20	5.00	4.40	4.80	5.00	6.20	6.90
26	5.50	5.10	6.00	7.00	6.20	5.20	4.60	4.40	4.80	5.00	6.00	6.70
27	5.50	5.10	6.30	6.70	6.30	5.20	4.60	4.40	4.80	5.00	6.00	6.60
28	5.50	5.10	7.30	6.60	6.30	5.20	4.50	4.40	4.70	5.00	6.10	6.40
29	5.30	......	7.80	6.50	6.40	5.10	4.50	4.40	4.70	5.00	6.20	6.40
30	5.30	......	8.50	6.30	6.30	5.10	4.50	4.40	4.70	4.90	6.30	6.70
31	5.70	......	8.60	......	6.20	......	4.50	4.40	......	4.90	......	6.50

NOTE.— The relation of gage height to discharge at this station is not affected by ice.

Current-meter Discharge Measurements of Oswegatchie River near Ogdensburg, N. Y.

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Corrected discharge.
1911.			*Sq. feet.*	*Feet.*	*Sec.-feet.*
Feb. 18	F. J. Shuttleworth	5.05	324	134	1,290
July 1 *a*	G. H. Canfield	5.22	443	230	1,050

a Measurement made from upstream side of bridge, where measuring conditions are poor.

Mean Daily Discharge, Second-feet, of Oswegatchie River near Ogdensburg, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	1,570	2,640	1,570	11,200	4,310	3,730	1,380	450	330	720	1,030	4,890
2	1,570	2,640	1,570	10,300	4,600	3,440	1,380	450	330	580	1,030	4,890
3	1,770	2,640	1,970	9,660	4,310	2,890	1,380	450	330	580	1,200	4,890
4	3,160	2,640	2,180	9,350	4,600	2,640	1,380	450	330	580	1,200	4,890
5	3,730	2,640	1,970	8,450	4,600	2,640	1,200	450	330	580	1,380	4,600
6	4,890	2,400	1,970	8,750	4,600	2,640	1,200	450	450	720	1,200	4,310
7	5,180	2,400	1,970	9,660	4,600	2,180	1,030	450	450	1,030	1,380	4,020
8	4,020	2,180	1,770	10,900	4,310	2,400	1,030	450	580	1,200	1,770	4,020
9	4,600	2,180	1,570	12,700	4,310	2,400	1,030	450	870	1,200	1,770	3,730
10	4,020	2,180	1,570	13,600	3,730	2,400	1,030	330	1,030	1,200	2,180	3,440
11	4,020	1,970	1,380	14,000	3,160	2,640	1,030	450	1,030	1,380	2,180	3,440
12	3,730	1,770	1,380	13,600	3,160	2,640	870	450	1,030	1,380	3,160	4,020
13	3,730	1,570	1,380	12,700	2,890	2,400	870	450	1,030	1,380	2,640	4,020
14	3,730	1,570	1,380	12,700	2,640	2,180	720	330	1,030	1,380	2,640	5,180
15	3,730	1,570	2,180	12,700	2,180	2,180	720	330	1,200	1,380	2,640	6,360
16	3,730	1,380	4,020	12,400	1,970	1,970	720	330	1,200	1,380	2,640	7,550
17	3,730	1,380	5,180	12,100	1,970	1,770	720	330	1,030	1,380	2,640	7,550
18	3,440	1,200	3,730	10,900	1,970	1,770	720	330	1,030	1,380	2,640	7,850
19	3,440	1,200	3,730	10,600	1,970	1,970	720	330	1,030	1,380	3,440	7,550
20	3,160	1,380	3,440	9,660	1,970	1,770	720	330	1,030	1,380	3,440	6,960
21	2,890	1,380	3,440	9,660	2,180	1,770	720	330	1,030	1,200	3,730	6,960
22	2,640	1,380	3,440	9,350	2,400	1,770	720	330	1,030	1,200	3,730	6,960
23	2,640	1,380	3,730	8,450	2,890	1,770	720	330	1,030	1,200	3,730	6,360
24	2,640	1,380	4,310	7,850	3,440	1,570	720	330	870	1,200	3,730	6,070
25	2,400	1,380	3,730	7,250	3,440	1,570	1,200	330	870	1,200	4,020	6,070
26	2,180	1,380	3,440	6,360	4,020	1,570	580	330	870	1,200	3,440	5,480
27	2,180	1,380	4,310	5,480	4,310	1,570	580	330	870	1,200	3,440	5,180
28	2,180	1,380	7,250	5,180	4,310	1,570	450	330	720	1,200	3,730	4,600
29	1,770	......	8,750	4,890	4,600	1,380	450	330	720	1,200	4,020	4,600
30	1,770	......	10,900	4,310	4,310	1,380	450	330	720	1,030	4,310	5,480
31	2,640	......	11,200	......	4,020	......	450	330	......	1,030	......	4,890

NOTE.— The daily discharge is determined from a fairly well-defined discharge rating curve.

Monthly Discharge of Oswegatchie River at Ogdensburg, N. Y.
[Drainage area, 1,580 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	5,180	1,570	3,120	2.970	3.42
February	2,640	1,200	1,810	1.150	1.20
March	11,200	1,380	3,560	2.250	2.59
April	14,000	4,300	9,820	6.220	6.94
May	4,600	1,970	3,480	2.200	2.54
June	3,730	1,380	2,150	1.360	1.52
July	1,380	450	867	0.549	0.63
August	450	330	376	0.238	0.27
September	1,200	330	813	0.515	0.57
October	1,380	580	1,130	0.715	0.82
November	4,310	1,030	2,670	1.690	1.89
December	7,850	3,440	5,380	3.410	3.93

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LAKE ONTARIO DRAINAGE.

GENERAL FEATURES.

In the northwestern part of the state of New York between Niagara and St. Lawrence rivers, is an area aggregating about 12,400 square miles drained by streams which flow into Lake Ontario. The divide which controls this drainage is very irregular. Extending to the south and southeast from Fort Niagara, it passes around the head waters of the Genesee a short distance into Pennsylvania; thence reëntering New York it runs southward and eastward from the interior group of lakes, turns to the north, encircles the sources of Black river, turns again to the west, and descends to the lake. The country thus included is level or gently undulating in the counties bordering the lake, but farther south it becomes more rolling, and a series of ridges, gradually increasing in height, stretch down between Cayuga and Seneca, and their companion lakes, finally becoming merged with the elevated broken country forming the principal divide, the abrupt slopes of which attain altitudes of from 2,000 to 2,500 feet about the head waters of the Genesee.

The easterly, or Black river lobe of the drainage basin receives the run-off from the southwestern slope of the Adirondack mountains — largely a rugged and forest-covered area — receiving heavy precipitation, especially in the winter.

Drift deposits are generally scattered over the section, and the soil is in part derived from that source and in part from the disintegration of native rocks.

The principal streams of the area are the Oswego, formed by the union of Seneca and Oneida rivers, which drain the chain of lakes in central New York, the Genesee, Salmon and Black rivers.

BLACK RIVER DRAINAGE BASIN.

BLACK RIVER.

DESCRIPTION.

Black river rises in the western part of Hamilton county, N. Y., flows southwestward across Herkimer county into Oneida county, turns near Forestport and runs somewhat west of north through

Lewis county to eastern Jefferson county, and then flows westward to Black river bay, at the eastern extremity of Lake Ontario. The upper part of the basin is very rugged and mountainous and contains a large number of lakes.

The regimen of the river is controlled by storage on its upper tributaries, including Beaver river at Beaver, a series of reservoirs at the head waters of Moose river, and additional reservoirs at Forestport and on the head waters of the main river.

Water is diverted from Black river through Forestport feeder to supply the Black river canal at Boonville. A portion of this diverted water flows northward from Boonville and enters Black river again at Lyons Falls; the remainder flows southward through the Black river canal and enters the Erie canal at Rome.

The results of gagings of this diversion may be found in the State Engineer's report for 1906, supplement, page 36, and also on pages 597–598 of the report for 1907.

BLACK RIVER NEAR FELTS MILLS, N. Y.

This station was established by Robert E. Horton, August 29, 1902, and has since been maintained by the U. S. Geological Survey in coöperation with this Department. It is located at the dam of the Lefebvre Paper Company, formerly owned by the Black River Traction Company, near the village of Felts Mills. The dam is nine miles upstream from Watertown and seven miles upstream from the old Huntingtonville gaging station on this stream. The drainage area is estimated at 1,851 square miles, or 37.5 square miles less than at Huntingtonville. The intervening area is mainly drained by two small streams, Townsend and Rutland Hollow creeks.

During the summer of 1910 the timber dam formerly used at this gaging station was replaced by a masonry dam located a few rods farther downstream. The new dam has a horizontal crest 3.75 feet in width. The downstream face slopes with a batter of about 1 on 1. The main crest, which is 300.45 feet in length, is substantially level. A discharge curve for this dam, using suitable coefficients, has been prepared.

The gage is attached vertically to a crib at the left-hand side of the stream above the mill. Correction is made to the gage readings for velocity of approach during high water. The discharge over the spillways has been calculated by means of the weir formula, using coëfficients derived from experiments of the United States Geological Survey for a dam of similar cross-section.

A wood pulp mill was constructed adjacent to this dam and has been in operation in 1907 and subsequent years. The mill contains four 72-inch and one 45-inch Smith-McCormick turbines. A record is kept of the hours run, and gate opening of each wheel, as well as of the head under which they operate.

Mean Daily Discharge, Second-feet, of Black River at Felts Mills, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	2,929	2,842	2,151	6,808	12,766	1,655	873	793	1,600	1,435	2,186	6,232
2......	2,158	2,693	2,019	6,472	14,676	2,693	873	793	1,290	816	2,447	6,099
3......	3,941	2,282	1,888	5,654	17,181	3,287	873	634	240	1,190	2,447	5,079
4......	5,208	2,151	1,888	4,747	19,123	2,414	714	793	801	1,948	2,314	3,318
5......	4,990	1,888	1,655	4,530	15,799	2,019	634	714	1,215	2,728	2,011	3,772
6......	4,344	1,888	1,536	7,319	12,241	5,340	475	714	1,290	3,066	1,550	3,531
7......	3,468	1,830	1,597	12,241	9,633	5,497	714	634	2,657	3,066	2,186	3,611
8......	4,125	1,772	1,655	14,258	7,575	5,183	714	634	2,381	3,061	4,180	3,531
9......	2,839	1,713	1,536	16,351	6,136	3,771	873	714	2,024	3,386	4,991	3,611
10......	2,606	1,655	1,536	17,181	5,654	3,139	793	793	1,849	2,728	4,991	7,995
11......	2,606	1,536	1,536	14,957	4,965	2,414	634	873	1,550	2,314	4,518	8,011
12......	2,364	1,536	1,536	13,302	4,094	2,019	634	952	1,908	2,186	4,515	8,668
13......	2,839	1,536	1,536	13,029	3,448	3,448	634	873	2,186	1,908	3,864	10,554
14......	2,578	1,536	1,830	13,575	2,151	4,530	634	1,038	2,006	1,799	4,991	13,547
15......	2,414	1,597	3,139	16,075	2,282	5,183	714	1,038	1,853	1,568	4,991	16,335
16......	2,414	1,888	2,842	18,013	2,282	5,183	793	1,529	1,511	1,292	4,518	13,868
17......	2,414	1,888	2,282	18,845	1,772	5,183	873	1,668	1,502	1,237	3,779	11,624
18......	2,282	1,536	2,019	16,075	2,151	4,094	1,123	1,719	665	1,361	3,066	10,258
19......	1,888	1,536	1,888	13,849	2,151	3,448	1,655	1,771	1,190	1,618	5,876	9,024
20......	1,597	1,655	1,772	11,715	2,282	2,842	1,207	1,043	910	1,600	5,313	7,802
21......	1,655	1,713	1,655	10,959	2,545	2,282	1,040	1,005	839	2,024	6,499	3,919
22......	1,655	1,713	1,655	10,456	2,842	1,888	873	887	839	2,163	6,499	3,741
23......	1,655	2,019	2,151	9,633	2,545	1,655	957	1,062	1,039	1,550	4,788	5,804
24......	1,655	1,888	2,545	9,442	3,610	1,536	957	1,290	1,502	1,696	4,140	8,913
25......	1,772	1,772	2,414	9,252	4,530	1,291	555	1,202	600	3,552	4,140	8,136
26......	1,655	1,655	2,545	9,019	4,747	1,123	793	1,238	839	3,028	3,244	7,267
27......	1,207	1,536	3,771	9,442	4,312	1,040	714	677	939	2,447	2,732	6,845
28......	2,151	2,085	9,442	10,456	3,287	1,772	793	1,052	1,034	2,186	3,779	5,804
29......	3,139	......	8,319	11,463	2,693	1,655	873	1,261	839	1,849	6,499	3,868
30......	2,990	......	7,830	12,241	2,693	1,413	957	1,799	1,053	1,183	6,499	3,552
31......	3,287	......	7,319	......	2,151	......	793	1,908	......	2,024	......	4,193
Mean.	2,672	1,834	2,822	11,579	5,946	2,967	830	1,068	1,338	2,065	4,118	7,049

Monthly Discharge of Black River at Felts Mills, N. Y.
[Drainage area, 1,851 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	5,208	1,207	2,672	1.44	1.66
February	2,842	1,536	1,834	0.991	1.03
March	9,442	1,536	2,822	1.52	1.75
April	18,845	4,530	11,579	6.26	6.98
May	19,123	1,772	5,946	3.21	3.70
June	5,497	1,040	2,967	1.60	1.78
July	1,655	475	830	0.448	0.516
August	1,908	634	1,068	0.577	0.665
September	2,657	240	1,338	0.723	0.807
October	3,552	816	2,065	1.12	1.29
November	6,499	1,550	4,118	2.22	2.48
December	16,335	3,318	7,049	3.81	4.39

MOOSE RIVER DRAINAGE BASIN.

DESCRIPTION.

Moose river is tributary to Black river at Lyons Falls, N. Y., joining Black river just above the head of the fall of about 50 feet. The drainage of Moose river lies chiefly in Hamilton and Herkimer counties and comprises a wild, rugged and little inhabited region largely forest covered, but containing also large tracts of cut and burned-over lands, numerous and extensive swamps and lakes. The stream above the gaging station near McKeever comprises three main branches. The south branch is chiefly broad and sluggish. The area tributary to this branch contains extensive swamps and marshes and but few lakes, the most important lakes being the Limekill and Little Moose lakes. The middle branch is substantially a continuous chain of lakes, known as the Fulton Chain, extending from Old Forge a distance of about 15 miles upstream through eight different lakes. The outflow from Fulton Chain is artificially controlled by a State dam at Old Forge. The first to fourth lakes, inclusive, are at elevation 1,706 feet above tide. There is also a dam at the outlet of the sixth lake. Sixth, seventh and eighth lakes are at elevations 1,785 to 1,788 feet above tide. The north branch of the stream is made up of a large number of scattered lakes, the most important one

being Big Moose lake. The lower course of the north branch is sluggish and tortuous. The drainage basin above McKeever is nearly all shown on the Big Moose, Raquette Lakes, Old Forge and West Canada Lakes quadrangles of the U. S. Geological Survey topographic maps.

MOOSE RIVER AT MOOSE RIVER, N. Y.

A gaging station was established June 5, 1900, at Moose River village by Robert E. Horton, and has since been maintained by the United States Geological Survey in coöperation with this Department.

The stream is smooth above the gaging station to the foot of McKeever dam, two miles upstream, but a short distance above the gage it is divided by an island, which creates an ice jam during winter and spring freshets. A short distance below the station a fall occurs. The bed of the stream is of cobble with occasional boulders, the current is smooth, and the depth is fairly uniform. The stream freezes over in winter, alternate layers of ice and snow or slush often forming in such a manner as to prevent discharge measurements being made.

A cableway, having a clear span of 269 feet, was erected in June, 1903, from which current-meter measurements have since been made. The initial point for soundings is the left support of the cable.

The gage, which is read twice daily by Chris Hannon, consists of a graduated board scale, attached to posts on the left bank of the stream, and comprises a high-water and a low-water section. During the ice season the gage is read once each week. The gage was carried out by an ice freshet in February, 1903, and was replaced at a slightly different elevation. The bench-mark is on the top of a boulder on the left bank, 300 feet upstream from the cableway. The elevation of the bench-mark is arbitrarily assumed at 100.00. The zero mark of the gage was elevation 84.64 prior to February 28, 1903, and has been elevation 84.47, or 15.53 feet below the bench-mark, since February 28, 1903.

Mean Daily Gage Height, in Feet, of Moose River at Moose River, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.6	......	......	4.0	6.6	2.0	1.60	0.80	0.50	1.00	3.00	2.2
2	2.2	......	......	......	8.6	2.2	1.50	0.80	0.50	1.10	2.90	2.1
3	2.9	......	......	......	6.6	2.3	1.50	0.75	0.60	1.20	3.00	2.2
4	3.2	2.9	2.4	......	5.2	2.2	1.35	0.70	0.60	1.15	3.10	2.3
5	3.4	......	......	......	5.2	2.5	1.20	0.60	0.75	1.50	3.00	2.4
6	3.5	......	......	......	5.0	2.9	1.05	0.50	0.90	1.90	3.20	2.5
7	3.9	......	......	......	4.7	2.8	0.90	0.60	0.90	2.00	3.60	2.6
8	4.2	......	......	4.5	4.2	2.6	0.85	0.60	0.80	2.00	3.95	2.7
9	4.2	......	......	......	4.1	2.2	0.70	0.50	0.80	2.10	3.90	3.1
10	2.2	......	......	......	4.0	2.0	1.05	0.50	0.80	2.20	3.80	3.6
11	1.8	2.9	2.6	......	3.4	1.9	1.10	0.60	0.90	1.90	3.70	4.4
12	......	......	......	......	3.0	2.0	1.10	0.60	0.90	1.80	3.60	5.2
13	......	......	......	......	2.7	2.0	1.10	0.75	0.90	1.80	3.30	7.0
14	2.3	......	......	......	2.6	1.8	1.10	0.70	0.80	1.90	3.00	5.5
15	......	......	......	6.4	2.6	1.8	1.20	0.65	0.90	1.90	2.60	4.3
16	......	......	......	5.9	2.4	1.7	0.95	0.60	1.00	1.80	2.10	4.0
17	......	......	......	4.6	2.3	1.6	1.20	0.70	0.90	2.00	1.80	3.8
18	......	2.6	2.6	3.7	2.2	1.6	1.55	0.60	0.80	2.20	1.60	3.8
19	......	......	......	3.2	2.0	1.6	1.65	0.60	0.70	2.40	1.60	3.6
20	......	......	......	3.1	2.0	1.7	1.30	0.70	0.70	2.80	1.60	3.4
21	2.3	......	......	3.5	2.2	1.6	1.15	0.70	0.80	3.00	1.50	3.3
22	......	......	......	3.9	2.2	1.5	1.00	0.60	0.90	3.00	1.50	3.4
23	......	......	......	3.6	2.6	1.6	1.10	0.60	0.90	3.10	1.40	3.6
24	......	......	......	3.8	2.2	1.6	1.00	0.50	0.80	3.00	1.50	3.8
25	......	2.6	2.4	4.0	2.2	1.5	1.10	0.50	0.70	3.00	1.60	4.4
26	......	......	......	5.0	2.3	1.6	1.00	0.50	0.80	3.10	1.50	4.0
27	......	......	......	5.8	2.4	1.6	0.90	0.60	0.90	3.00	1.60	3.4
28	2.5	......	......	6.0	2.3	1.5	0.85	0.60	1.00	3.00	1.70	3.5
29	......	......	......	6.6	2.3	1.6	0.70	0.70	1.00	3.10	2.00	3.8
30	......	......	......	6.3	2.1	1.6	0.70	0.80	0.90	3.00	2.20	3.5
31	......	......	......	......	2.2	......	0.70	0.60	......	3.10	......	3.1

NOTE.— The relation of gage height to discharge was affected by ice January 1 to April 14. Probably not much backwater from ice during December. The gage readings were probably to water-surface.

Current-meter Discharge Measurements of Moose River at Moose River, N. Y.

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Corrected discharge.
1911.			*Square feet.*	*Feet.*	*Second-feet.*
April 29 *a*	W. G. Hoyt	6.54	1,760	246	4,700
July 15	C. S. De Golyer	1.04	440	213	295

a Measurement partly estimated by timing floating logs to obtain velocity. Area determined by separate soundings. Coefficient of 0.84 from vertical velocity curves taken in 1904.

Mean Daily Discharge, Second-feet, of Moose River at Moose River, N. Y.

DAY.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.									
1	......	4,780	610	465	240	175	290	1,150	700
2	......	7,200	700	435	240	175	315	1,080	650
3	......	4,780	750	435	228	195	345	1,150	700
4	......	3,140	700	390	215	195	330	1,220	750
5	......	3,140	855	345	195	228	435	1,150	800
6	......	2,920	1,080	312	175	265	570	1,290	855
7	......	2,600	1,020	265	195	265	610	1,590	910
8	......	2,120	910	252	195	240	610	1,900	965
9	......	2,030	700	215	175	240	650	1,850	1,220
10	......	1,940	610	302	175	240	700	1,760	1,590
11	......	1,430	570	315	195	265	570	1,670	2,300
12	......	1,150	610	315	195	265	535	1,590	3,140
13	......	965	610	315	228	265	535	1,360	5,260
14	......	910	535	315	215	240	570	1,150	3,470
15	4,540	910	535	345	205	265	570	910	2,210
16	3,940	800	500	278	195	290	535	650	1,940
17	2,500	750	465	345	215	265	610	535	1,760
18	1,670	700	465	450	195	240	700	465	1,760
19	1,290	610	465	482	195	215	800	465	1,590
20	1,220	610	500	375	215	215	1,020	465	1,430
21	1,510	700	465	330	215	240	1,150	435	1,360
22	1,850	700	435	290	195	265	1,150	435	1,430
23	1,590	910	465	315	195	265	1,220	405	1,590
24	1,760	700	465	290	175	240	1,150	435	1,760
25	1,940	700	435	315	175	215	1,150	465	2,300
26	2,920	750	465	290	175	240	1,220	435	1,940
27	3,820	800	465	265	195	265	1,150	465	1,430
28	4,060	750	435	252	195	290	1,150	500	1,510
29	4,780	750	465	215	215	290	1,220	610	1,760
30	4,420	650	465	215	240	265	1,150	700	1,510
31	......	700	......	215	195	......	1,220	......	1,220

NOTE.— The daily discharge is determined from a discharge rating curve, well defined between 240 and 3,650 second-feet.

Monthly Discharge of Moose River at Moose River, N. Y.
[Drainage area, 346 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	....	....	600	1.730	1.99
February	....	....	500	1.450	1.51
March	6,060	910	3,030	8.760	10.10
April	4,660	800	1,940	5.610	6.26
May	2,290	135	1,160	3.350	3.86
June	1,720	135	814	2.350	2.62
July	345	135	258	0.746	0.86
August	2,040	90	679	1.960	2.26
September	1,180	215	410	1.180	1.32
October	1,220	90	681	1.970	2.27
November	938	375	620	1.790	2.00
December	518	90	308	0.890	1.03

NOTE.— The monthly discharge for January and February is estimated at approximately 25 per cent of the discharge of Black river at Felts Mills. This ratio holds quite consistently for these two stations during the open-water period.

The determination of discharge for November, as published at page 345 in the State Engineer's report for 1910, was slightly in error and has been corrected in the above table.

Monthly Discharge of Moose River at Moose River, N. Y.
[Drainage area, 346 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	....	....	600	1.730	1.99
February	....	....	400	1.160	1.21
March	....	....	700	2.020	2.33
April	....	....	2,630	7.600	8.48
May	4,780	610	1,660	4.800	5.53
June	1,080	435	592	1.710	1.91
July	482	215	321	0.928	1.07
August	240	175	202	0.584	0.67
September	290	175	244	0.705	0.79
October	1,220	290	782	2.260	2.61
November	1,900	405	943	2.730	3.05
December	5,260	650	1,670	4.830	5.57

NOTE.— The discharge, January 1 to April 14, is estimated at approximately 25 per cent of the discharge of Black river at Felts Mills.
The mean discharge, April 1 to 14, is estimated as 2,500 second-feet.

SALMON RIVER DRAINAGE BASIN.

DESCRIPTION.

Salmon river rises in the southwestern part of Lewis county and flows southward and then northward, entering Lake Ontario near Port Ontario. Its drainage area comprises about 285 square miles. The topography is generally rolling in character and the soil is sandy, rock lying near the surface in the upper part of the basin, where there are extensive tracts of virgin forest.

The mean annual precipitation is about thirty-five inches, and during the winter there is usually a heavy fall of snow, which often accumulates in the forest areas to a depth of several feet. The gradual melting of this snow, in the spring, tends to prevent high freshets.

The basin affords several opportunities for storage. At High Falls there is an undeveloped fall of about 110 feet, occurring in a very short distance. Considering its size, this river has rather important power possibilities.

A gaging station has been maintained in this river basin near Pulaski from 1900 to 1908 and 1910 to 1911.

SALMON RIVER AT FOX'S BRIDGE, NEAR PULASKI, N. Y.

This station is located on the first highway bridge above the village of Pulaski and was established by Robert E. Horton for the U. S. Geological Survey, in coöperation with this Department, September 5, 1900. A vertical staff gage was attached to the up-

stream end of the center pier, with its zero 11.59 feet below the bench-mark, which is the top of the cap stone of the center pier.

This gage was removed by ice during the winter of 1901–1902 and then replaced July 23, 1902, by a chain gage, having its zero 12.79 feet below the original bench-mark. The station was discontinued June 30, 1907, reëstablished August 16, 1908, and discontinued December 6, 1908. It was maintained during these periods in coöperation with this Department.

On July 14, 1910, it was reëstablished by the Survey in coöperation with the State Water Supply Commission of New York, for the purpose of obtaining general statistical data regarding the flow of Salmon river. The gage datum has remained permanent since July 23, 1902. Discharge measurements are made from the bridge or by wading.

The station can be reached by a short drive from either Pulaski or Richland. Conditions are poor for records during the winter, when the channel usually becomes clogged by ice. The open channel rating is fairly good.

Information regarding this station is contained in the reports of this Department and in the annual reports of the U. S. Geological Survey.

Mean Daily Gage Height, in Feet, of Salmon River at Fox's Bridge, near Pulaski, N. Y.

DAY.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.									
1	......	5.60	3.06	3.15	2.45	2.70	2.84	3.65	4.05
2	......	6.30	3.29	2.95	2.45	2.65	2.94	3.49	3.85
3	4.05	5.20	3.02	2.80	2.40	2.60	3.04	3.26	3.55
4	3.79	4.35	2.86	2.72	2.45	2.60	3.19	3.16	3.32
5	4.05	4.05	3.65	2.62	2.40	2.50	4.10	3.12	3.40
6	4.85	3.85	4.70	2.60	2.40	4.20	3.85	3.04	3.40
7	6.20	3.85	3.90	2.60	2.40	4.05	4.10	3.90	3.30
8	6.20	3.75	3.75	2.55	2.48	3.40	3.95	4.40	3.30
9	5.80	3.70	3.24	2.50	......	3.22	3.44	3.95	3.60
10	5.60	3.60	3.09	2.50	2.75	3.18	3.29	3.60	4.70
11	5.50	3.46	2.94	2.50	2.60	2.95	3.14	3.65	5.00
12	5.70	3.36	3.65	2.65	2.58	2.90	3.04	3.52	6.00
13	5.90	3.24	3.85	2.60	2.50	2.90	2.96	4.90	7.00
14	6.50	3.14	3.50	2.52	2.45	2.85	2.86	4.35	5.70
15	7.10	3.09	3.19	2.48	2.45	2.80	2.82	4.05	4.65
16	6.30	3.04	3.06	2.50	2.50	2.95	2.74	3.80	4.45
17	5.40	3.02	2.96	3.05	2.48	2.90	2.76	3.34	4.95
18	5.20	2.96	2.84	4.00	2.45	2.79	3.32	4.05	4.50
19	5.30	2.96	2.79	3.32	2.52	2.66	4.05	4.40	4.05
20	5.60	3.19	2.74	2.90	2.45	2.62	3.65	4.15	3.50
21	5.80	3.09	2.64	2.80	2.42	2.59	3.42	4.00	3.48
22	5.30	2.96	2.69	2.70	2.40	2.79	3.39	3.75	3.60
23	4.95	2.92	2.74	2.60	2.40	2.94	3.60	3.55	4.35
24	4.75	3.16	2.68	2.62	2.40	2.82	3.75	3.55	4.45
25	5.50	3.22	2.65	2.78	2.40	2.72	3.44	3.50	4.05
26	5.60	3.09	2.65	2.68	2.42	2.64	3.29	3.50	3.80
27	5.50	2.92	3.95	2.62	2.42	2.64	3.14	3.45	3.90
28	5.40	2.84	5.40	2.55	2.58	2.76	3.14	3.48	4.00
29	5.50	2.79	4.00	2.55	3.10	2.86	3.14	4.55	3.48
30	5.40	2.72	3.65	2.50	2.95	2.84	3.04	4.35	3.40
31	......	2.69	......	2.50	2.78	......	3.09	......	3.42

Mean Daily Discharge, Second-feet, of Salmon River at Fox's Bridge, near Pulaski, N. Y.

DAY.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.						
1	......	118	666	145	400	465
2	......	118	775	145	400	452
3	......	160	413	118	865	400
4	......	145	912	112	732	400
5	......	275	690	296	690	352
6	......	690	865	1,230	626	285
7	......	1,060	884	1,290	690	285
8	......	432	500	820	595	285
9	......	285	370	465	595	......
10	......	296	340	413	820	......
11	......	1,010	191	340	2,290	......
12	......	793	226	1,040	1,540	......
13	......	572	152	226	1,190	......
14	226	260	160	191	912	......
15	135	200	191	191	915	......
16	145	160	152	183	707	......
17	200	260	172	160	626	......
18	191	235	118	152	572	......
19	118	521	118	152	521	......
20	112	595	152	152	500	......
21	125	329	118	135	400	......
22	118	200	135	135	535	......
23	160	213	103	183	521	......
24	172	152	118	340	572	......
25	135	152	172	329	690	......
26	135	213	152	912	674	......
27	118	285	183	758	595	......
28	152	245	160	707	535	......
29	135	160	160	707	521	......
30	118	118	183	595	521	......
31	152	172	......	479	......	......

NOTE.— This table is a revision of and supersedes that published on page 727 of the State Engineer's report for 1910.

Mean Daily Discharge, Second-feet, of Salmon River at Fox's Bridge, near Pulaski, N. Y.

DAY.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.									
1	1,860	3,710	376	432	103	191	255	820	1,230
2	1,500	5,050	528	312	103	172	307	682	1,010
3	1,230	2,970	352	235	88	152	364	507	732
4	950	1,610	265	200	103	152	458	439	550
5	1,230	1,230	820	160	88	118	1,290	413	610
6	2,370	1,010	2,130	152	88	1,410	1,010	364	610
7	4,850	1,010	1,060	152	88	1,230	1,290	1,060	535
8	4,850	912	912	135	112	610	1,120	1,680	535
9	4,090	865	493	118	162	479	642	1,120	775
10	3,710	775	394	118	213	452	528	775	2,130
11	3,520	658	307	118	152	312	426	820	2,620
12	3,900	580	820	172	145	285	364	707	4,470
13	4,280	493	1,010	152	118	285	318	2,450	6,450
14	5,450	426	690	125	103	260	265	1,610	3,900
15	6,660	394	458	112	103	235	245	1,230	2,060
16	5,050	364	376	118	118	312	209	960	1,760
17	3,330	352	318	370	112	285	217	565	2,540
18	2,970	318	255	1,170	103	231	550	1,230	1,830
19	3,150	318	231	550	125	175	1,230	1,680	1,230
20	3,710	458	209	285	103	160	820	1,350	690
21	4,090	394	168	235	94	149	626	1,170	674
22	3,150	318	187	191	88	231	602	912	775
23	2,540	296	209	152	88	307	775	732	1,610
24	2,210	439	183	160	88	245	912	732	1,760
25	3,520	479	172	226	88	200	642	690	1,230
26	3,710	394	172	183	94	168	528	690	960
27	3,520	296	1,120	160	94	168	426	650	1,060
28	3,330	255	3,330	135	145	217	426	674	1,170
29	3,520	231	1,170	135	400	265	426	1,900	674
30	3,330	200	820	118	312	255	364	1,610	610
31	......	187	......	118	226	......	394	......	626

Monthly Discharge of Salmon River at Fox's Bridge, near Pulaski, N. Y.
[Drainage area, 264 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
July 14–31	226	112	147	0.555	0.37
August	1,060	118	336	1.270	1.46
September	912	103	318	1.200	1.34
October	1,040	112	423	1.600	1.84
November	2,290	400	720	2.730	3.05
December	....	....	335	1.270	1.46

NOTE.— This table is a revision of and supersedes that published on page 727 of the State Engineer's report for 1910.

Monthly Discharge of Salmon River at Fox's Bridge, near Pulaski, N. Y.
[Drainage area, 264 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
April	6,660	950	3,380	12.800	14.28
May	5,050	187	871	3.300	3.80
June	3,330	168	651	2.470	2.76
July	1,170	112	226	0.856	0.99
August	400	88	131	0.496	0.57
September	1,410	118	324	1.230	1.37
October	1,290	209	582	2.200	2.54
November	2,450	364	1,010	3.830	4.27
December	6,450	535	1,530	5.800	6.69

OSWEGO-ONEIDA-SENECA RIVER DRAINAGE BASIN.

Description of Basin.

Oswego river is formed by the union of Seneca and Oneida rivers at Three River Point about twelve miles northwest of Syracuse, N. Y., whence its course is northwestward to Oswego, where it enters Lake Ontario. The length of the river, from the junction to the mouth, is about 20.5 miles, and the drainage basin along this distance is a narrow strip of country, moderately rolling. Above the junction of Seneca and Oneida rivers the basin spreads out, attaining an extreme width east and west of about 100 miles and north and south of from seventy to eighty miles. There is, on the whole, a gradual rise from the low, level lands which border Lake Ontario to the north-south ridges which separate the various lakes south of Seneca river and which farther south become merged with the still more elevated country lying along the southern boundary of the Lake Ontario watershed.

The most remarkable feature of the drainage basin is the chain of lakes stretching across its southern border. From west to east the principal lakes are, in order, Canandaigua, Keuka, Seneca, Cayuga, Owasco, Skaneateles and Oneida. These seven lakes include a water-surface of, approximately, 280 square miles, increased by four smaller lakes — Cross, Onondaga, Otisco and Cazenovia — to about 295 square miles. The larger of the lakes, Oneida, Cayuga and Seneca, are used for steam-towing navigation, having connection with the Erie and Oswego canals. Cayuga and Seneca lakes are noted for their depth and for the abrupt slopes of their beds. The influence of the lakes on Oswego river is of the utmost importance in contributing to the steadiness of its flow.

A fall of 100 feet in the course of the main river is largely utilized by seven dams, which also partly canalize the stream. The intervening stretches are covered by the Oswego canal, which draws its water-supply from the river.

Drainage Areas Tributary to Oneida Lake and Oneida River. a

LOCALITY.	AREA IN SQUARE MILES. Place to place.	Sub-total.	Total.
East branch, Fish creek.			
Head to junction with Alder creek	45.40		
Alder creek	25.70	71.10	
Junction with Alder creek to junction with Point Rock creek	36.70	107.80	
Point Rock creek	19.90	127.70	
Junction with Point Rock creek to junction with Fall brook	4.50	132.20	
Fall brook	13.50	145.70	
Junction with Fall brook to junction with Florence creek	1.30	147.00	
Florence creek	20.40	167.40	
Junction with Florence creek to junction with Furnace creek (Taberg)	1.70	169.10	
Furnace creek	14.40	183.50	
Taberg to junction with West branch, Fish creek	3.60	187.10	
West branch, Fish creek.			
Head to lower dam, Williamston	25.80	25.80	
Williamston to West Camden	27.10	52.90	
West Camden to junction with Mad river, Camden	14.20	67.10	
Mad river	45.40	112.50	
Camden to junction with Little river	21.60	134.10	
Little river	52.10	186.20	
Little river to McConnellsville	4.00	190.20	
McConnellsville to junction with East branch, Fish creek	11.90	202.10	
Junction of East and West branches, Fish creek, to junction with Wood creek	27.80	389.20	417.00
Wood creek.			
Above Erie canal, Rome	10.20	10.20	
Erie canal, Rome, to junction with Mud creek	2.00	12.20	
Mud creek	20.00	32.20	
Junction with Mud creek to junction with Canada creek	6.40	38.60	
Canada creek	31.00	69.60	
Junction with Canada creek to junction with Stoney creek	1.20	70.80	
Stoney creek	20.40	91.20	
Junction with Stoney creek to junction with Fish creek	31.40	122.60	122.60
Oneida creek.			
Head to Peterboro	13.40	13.40	
Peterboro to falls	6.70	20.10	
Falls to Munnsville	15.60	35.70	
Munnsville to Kenwood	27.30	63.00	
Kenwood to Oneida Castle (State dam)	10.80	73.80	
Oneida Castle to Sconondoa creek, Oneida	2.10	75.90	
Sconondoa creek	34.30	110.20	
Sconondoa creek to Durhamville	4.80	115.00	
Durhamville to mouth	28.00	143.00	143.00
Canaseraga creek.			
Head to Perryville	5.70		
Perryville to Erie canal	9.00	14.70	
Erie canal to Douglas ditch	8.10	22.80	
Cowassalon creek.			
Head to Clockville creek	17.20	17.20	
Clockville creek	11.10	28.30	
Clockville creek to Erie canal	5.50	33.80	
Erie canal to mouth of Douglas ditch	39.30	73.10	
Junction with Douglas ditch to Lakeport	3.20	95.90	99.10
Chittenango creek.			
Erieville reservoir, water-surface	0.45		
Erieville reservoir, land drainage	3.30	3.75	
Erieville reservoir to Cazenovia lake	30.50	34.25	
Cazenovia lake, water-surface	1.70	35.95	
Cazenovia lake, land drainage	8.70	44.65	
Cazenovia lake to Chittenango falls	14.40	59.05	
Chittenango falls to State dam, Chittenango	17.90	76.95	
State dam to junction with Butternut creek	28.10	105.05	
Butternut creek.			
Head to Jamesville reservoir	47.40	47.40	
Jamesville reservoir to State dam	5.70	53.10	
State dam to junction with Limestone creek	19.20	72.30	
Limestone creek.			
De Ruyter reservoir, water-surface	1.00		
De Ruyter reservoir, land drainage	17.80	18.80	
De Ruyter reservoir to junction with East branch	4.30	23.10	
East, or New Woodstock branch	12.60	35.70	

a From U. S. Geological Survey topographic maps.

Drainage Areas Tributary to Oneida Lake and Oneida River — (Concluded).

LOCALITY.	AREA IN SQUARE MILES.		
	Place to place.	Sub-total.	Total.
Butternut creek (*Concluded*).			
Junction with East branch to junction with West branch	34.50	70.20	
West branch, Limestone creek, enters above State feeder dam	24.80	95.00	
State dam to junction with Butternut creek	18.20	113.20	185.50
Junction with Limestone creek to Chittenango creek	1.10	186.60	291.65
Chittenango creek, junction with Butternut creek to Bridgeport	30.30	321.95	
Chittenango creek, Bridgeport to Oneida lake	4.30	326.25	326.25
Oneida lake drainage through main streams	....	1,107.95	
Big Bay creek	26.30		
Little Bay creek	11.50		
Scriba creek	45.40		
Coast drainage, north shore Oneida lake	54.50		
Coast drainage, south shore Oneida lake	28.90	166.60	1,274.55
Water-surface, Oneida lake	78.00		
Land drainage, Oneida lake	1,274.55	1,352.55	
Oneida river.			
Brewerton to Caughdenoy creek	4.80	4.80	1,357.90
Caughdenoy creek	19.30	24.10	1,376.70
Caughdenoy creek to Oak Orchard	25.10	49.20	1,401.80
Mud creek	34.70	83.90	1,436.50
Oak Orchard to Potts creek	5.00	88.90	1,441.50
Potts creek	22.90	111.80	1,464.40
Six-Mile creek	24.00	135.80	1,488.40
Potts creek to Three River Point	4.50	140.30	1,492.90

Drainage Areas Tributary to Seneca River. a

LOCALITY.	AREA IN SQUARE MILES.			
	Place to place.	Sub-total.	Branch total.	General total.
Mud creek.				
Head to and including Schaffer creek	51.31			
Junction with Schaffer creek to junction with Sucker brook, Victor (formerly Ganargua creek)	25.70	77.01		
Sucker brook	20.15	97.16		
Ganargua creek.				
Victor to Erie canal, Macedon	26.20	123.36		
Macedon to junction with East Red creek, East Palmyra	55.00	178.36		
East Red creek	59.50	237.86		
East Red creek to Canandaigua outlet	61.37	299.23	299.23	
Canandaigua lake.				
Naples creek	48.55			
West river	42.08	171.97		
Other land drainage	81.34			
Water-surface	16.40	....	188.37	
Canandaigua outlet.				
Foot of lake to and including Black brook	50.37	238.74		
Black brook to Flint creek, at Phelps	54.34	293.08	293.08	
Flint creek.				
Above Patten	31.59			
Patten to Gorham, not including Gorham swamp	24.84	56.43		
Gorham swamp	5.46	61.89		
Gorham to Orleans	25.57	87.46		
Orleans to junction with Canandaigua outlet at Phelps	15.21	102.67	395.75	
Phelps to junction with Ganargua creek at Lyons, forming Clyde river	48.36	444.11	743.34	

a From U. S. Geological Survey topographic maps.

Drainage Areas Tributary to Seneca River — (Concluded).

LOCALITY.	Area in Square Miles. Place to place.	Sub-total.	Branch total.	General total.
Clyde river.				
Lyons to junction with Seneca river, foot of Cayuga lake	141.11	884.45	....	884.45
Seneca river.				
Seneca lake.				
Keuka lake.				
Land drainage to outlet	160.96			
Water-surface	17.51	178.47		
Keuka outlet to Seneca lake	24.80	203.27		
Catharine creek.				
Above Montour Falls	66.46	....	640.93	
Montour Falls to Seneca lake	29.91	96.37		
Watkins Glen creek	23.53	23.53		
Direct lake drainage	317.76	317.76		
Water-surface	67.16	....	708.09	
Seneca river, foot of Seneca lake to Waterloo	40.90	....	748.99	
Seneca river, Waterloo to Seneca Falls	28.55	....	777.54	
Seneca river, Seneca Falls to Mud lock, foot of Cayuga Lake	7.52	....	785.06	
Cayuga lake.				
Cascadilla creek	14.38			
Six-Mile creek	59.05			
Buttermilk creek	29.16			
Cayuga inlet	67.02			
Salmon creek	91.13			
Fall creek.				
Above Freeville	58.68			
Virgil creek	26.00	84.68		
Freeville to Cornell dam	30.62	115.20		
Cornell dam to Cayuga lake	1.56	116.76		
Taghanic creek.				
Above Halseyville	56.96			
Halseyville to Taghanic falls	10.40	67.36		
Taghanic falls to Cayuga lake	.39	67.75		
Other Cayuga lake drainage	275.04	720.29		
Cayuga lake, water-surface	66.31	786.60	1,571.60	
Seneca river, Cayuga lake, to junction with Clyde river	15.42	....	1,587.02	2,471.47
Seneca river, junction with Clyde river to junction with Owasco outlet	146.23	....	....	2,617.70
Owasco lake.				
Owasco inlet, above Moravia	74.33			
Moravia to Owasco lake	42.92	117.25		
Direct drainage to lake	76.24	193.49		
Foot of lake to State dam	.98	194.47		
Water-surface	10.40	204.87		
Owasco outlet to junction with Seneca river	16.73	221.66	....	2,839.30
Seneca river, junction with Owasco outlet to junction with Skaneateles outlet	98.70	....	....	2,938.00
Skaneateles lake.				
Land drainage to foot	58.41			
Water-surface	14.13	72.54		
Foot of lake to Willow Glen	1.84	74.38		
Willow Glen to Seneca river	16.69	91.07	....	3,029.07
Seneca river, Skaneateles outlet to Carpenter brook	25.50	....	....	3,054.57
Carpenter brook	18.70	....	....	3,073.27
Seneca river, Carpenter brook to Baldwinsville	48.10	....	....	3,121.37
Seneca river, Baldwinsville to Onondaga outlet	17.80	....	....	3,139.17
Onondaga lake.				
Otisco lake, land drainage to foot	41.40			
Otisco lake, water-surface	3.30	44.70		
Nine-Mile creek (Otisco outlet) to Onondaga lake	74.00	118.70		
Onondaga creek.				
Above junction with West brook	40.60			
Junction with West brook to inflow to Onondaga lake	65.30	105.90		
Other land drainage to Onondaga lake	59.10	283.70		
Onondaga lake, water-surface	4.70	288.40		
Onondaga lake, outlet to Seneca river	3.00	291.40	....	3,430.57
Seneca river, Onondaga outlet to Belgium	10.12	....	....	3,440.69
Seneca river, Belgium to Three River Pt	4.40	....	....	3,445.09

Drainage Areas Tributary to Oswego River. a

LOCALITY.	AREA IN SQUARE MILES.		
	Place to place.	Total from Three River Point.	Total drainage basin.
Oneida river, above Three River Point	....	....	1,493.00
Seneca river, above Three River Point	....	....	3,445.00
Oswego river at Three River Point	....	....	4,938.00
Three River Point to Phoenix	2.32	2.32	4,940.32
Phoenix to Hinmansville	17.58	19.90	4,957.90
Hinmansville to Ox creek	17.05	37.15	4,975.15
Ox creek	33.68	70.83	5,008.83
Ox creek to upper dam, Fulton	9.15	79.98	5,016.98
Fulton to Neatawanta creek	9.15	89.13	5,027.13
Neatawanta creek	21.92	111.05	5,049.05
Neatawanta creek to Black creek	1.01	112.06	5,050.06
Black creek	37.93	149.99	5,087.99
Black creek to Battle Island	.92	150.91	5,088.91
Battle Island to Minetto	2.11	153.02	5,091.02
Minetto to High dam	4.87	157.89	5,095.89
High dam to Oswego dam	1.22	159.11	5,097.11
Oswego dam to Lake Ontario	1.21	160.32	5,098.32

a From U. S. Geological Survey topographic maps.

OSWEGO RIVER.

The drainage area tributary to Oswego river is 160 square miles. This area comprises chiefly moderately-rolling, cultivated upland, having a good depth of soil overlying the rock, which as a rule, is visible only in the bed of the stream. A portion of the area is drained through lakes and marshes. The run-off from the direct drainage to Oswego river is moderate and the regimen differs but little from that resulting from the inflow of the two main tributaries — the Oneida and Seneca.

OSWEGO RIVER WATER-SURFACE ELEVATION RECORDS.

In the following series of tables there are given records of the mean daily elevation of water-surface of the Oswego river at different gaging stations during the year 1911. The elevations are uniformly referred to the Barge canal datum, which is equivalent to mean tide at New York, taken to be as elevation 14.73 below the old grist mill bench-mark at Greenbush (Rensselaer).

The tables of elevation of water-surface are arranged in order, proceeding upstream from the curved dam at Oswego through to Three River Point.

The accompanying table gives details as to the types of gages used, the datum of each and the manner in which they are read.

Water-surface Elevation Gages Maintained on the Oswego River During the Year 1911.

LOCATION.	Date established.	Observer.	Elevation of zero mark (B. C. datum).	Type of gage.	Subdivision of gage.	Readings taken to
Oswego, above curved dam	April 7, 1904	D. D. Tompkins	264.23	Staff	$\frac{1}{10}$ Foot	$\frac{1}{10}$ Foot.
Oswego, below High dam	" " "	Arthur C. Owens	265.86	"	$\frac{1}{10}$ "	$\frac{5}{100}$ "
Oswego, above High dam	" " "	" "	280.37	"	$\frac{1}{10}$ "	$\frac{5}{100}$ "
Minetto, below dam	April 18, 1904	W. W. Perry	286.61	Chain	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Minetto, above dam	" " "	" "	295.18	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Fulton, opposite Battle Island	Sept. 14, 1900	L. D. Sterling	294.53	Staff	$\frac{1}{10}$ "	$\frac{1}{100}$ "
Fulton, below Battle Island dam	April 8, 1904	Smith Sharp	300.94	Chain	$\frac{1}{10}$ "	$\frac{5}{100}$ "
Fulton, above Battle Island dam	April 11, 1904	" "	304.98	Staff	$\frac{1}{10}$ "	$\frac{5}{100}$ "
Fulton, above Battle Island dam, west side	Sept., 1911	L. D. Sterling	307.96	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Fulton, mouth of Waterhouse creek	April 9, 1904	Barge canal office employee	315.00	Ref. point	....	$\frac{1}{100}$ "
Fulton, L. H. & P. Co.'s tail-race	April 17, 1908	" " "	....	" "	....	$\frac{5}{100}$ "
Fulton, L. H. & P. Co.'s head-gates	" " "	" " "	337.50	" "	....	$\frac{5}{100}$ "
Fulton, L. H. & P. Co.'s head-gates	" " "	" " "	342.50	" "	....	$\frac{5}{100}$ "
Fulton, L. H. & P. Co.'s head-gates	" " "	" " "	335.90	" "	....	$\frac{5}{100}$ "
Fulton, above upper dam	April 9, 1904	" " "	362.40	" "	....	$\frac{5}{100}$ "
Fulton, mouth of Ox creek	April 12, 1904	B. M. Wilcox	347.71	Staff	$\frac{1}{10}$ Foot	$\frac{1}{10}$ "
Phoenix, Hinmansville bridge	April 13, 1904	Leon Hallenback	348.64	Chain	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Phoenix, below dam	April 16, 1904	Geo. Archambo	352.95	Staff	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Phoenix, above dam	" " "	" "	....	Ref. point	$\frac{1}{10}$ "	$\frac{5}{100}$ "

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River above Curved Dam, Oswego, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	268.73	268.53	268.23	269.63	269.23	267.43	267.03	267.33	267.73	267.93	268.13	268.63
2	268.93	268.63	268.63	269.83	269.13	267.33	267.13	267.73	267.63	268.13	268.13	268.63
3	268.93	268.53	268.63	269.73	269.03	267.43	266.93	267.73	267.83	268.23	268.13	268.73
4	269.03	268.63	268.63	269.53	269.03	267.63	267.13	267.83	267.93	268.23	268.03	268.73
5	269.03	268.93	268.83	269.53	268.93	267.53	266.93	267.83	267.93	268.03	268.23	268.73
6	269.03	268.53	268.63	269.93	268.93	267.63	267.03	268.03	267.83	268.03	268.03	268.63
7	269.03	268.03	268.53	270.33	269.03	267.63	266.93	267.93	267.23	268.23	268.13	268.53
8	269.23	268.13	268.53	270.33	268.83	267.63	266.73	267.83	267.53	267.93	268.23	268.53
9	269.13	268.33	268.43	270.53	268.73	267.63	266.93	267.13	267.93	268.13	268.13	268.53
10	268.93	268.33	268.33	270.43	268.73	267.63	266.73	267.43	268.33	268.23	268.23	268.53
11	268.93	268.33	268.53	270.33	268.53	267.83	266.73	267.73	268.53	268.23	268.33	268.53
12	268.83	268.83	268.93	270.43	268.43	267.73	267.33	267.73	268.53	267.93	268.53	268.53
13	268.73	268.43	269.13	270.33	268.33	267.63	267.43	268.03	268.53	267.93	268.33	268.73
14	268.73	268.33	269.13	270.23	268.53	267.43	267.73	267.13	268.53	268.03	268.33	268.73
15	269.13	268.23	269.23	270.23	268.23	267.53	267.63	267.13	268.53	268.03	268.33	268.93
16	268.83	268.13	269.23	270.43	268.13	267.43	267.73	266.93	268.63	268.03	268.43	269.13
17	268.63	268.13	268.83	270.13	268.03	267.43	268.13	266.73	268.63	267.93	268.43	269.33
18	268.63	268.13	268.93	270.03	268.03	267.73	267.73	267.23	268.53	267.93	268.53	269.23
19	268.63	269.13	269.03	270.03	268.03	267.33	267.63	267.13	268.53	267.93	268.73	269.23
20	268.63	268.23	268.73	269.93	268.03	267.33	267.73	267.33	268.53	267.93	268.73	269.13
21	268.63	268.43	268.73	269.83	268.33	267.33	267.63	266.93	268.53	268.03	268.83	269.03
22	268.83	268.33	268.73	269.73	268.23	267.13	267.43	267.33	268.53	268.33	268.93	268.93
23	268.73	268.33	268.73	269.93	267.93	267.23	267.63	267.33	268.53	268.33	268.93	269.13
24	268.63	268.43	268.83	269.63	267.83	267.23	267.53	267.13	268.53	268.23	268.93	269.23
25	268.43	268.43	268.73	269.63	267.73	267.43	267.33	267.33	268.13	268.13	268.93	269.43
26	268.23	268.73	269.13	269.53	267.73	267.23	267.13	267.23	268.03	268.03	268.93	269.33
27	268.23	268.63	269.03	269.43	267.63	267.23	267.73	267.93	268.23	268.03	268.83	269.23
28	268.53	268.33	269.43	269.33	267.83	267.23	267.83	267.03	268.03	268.13	268.83	269.23
29	268.93	......	269.53	269.23	267.73	267.23	267.83	267.53	268.13	*a*	268.73	269.03
30	268.73	......	269.63	269.43	267.83	267.23	268.23	267.73	268.13	*a*	268.83	268.93
31	268.43	......	269.63	......	267.43	......	267.33	267.93	......	*a*	......	269.03

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River below High Dam, near Oswego, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	269.26	269.96	270.26	270.76	269.96	268.26	267.76	267.56	267.86	268.06	268.26	269.46
2	269.26	269.96	270.26	270.76	269.96	268.06	267.66	267.66	267.76	268.06	268.36	269.26
3	269.66	269.66	270.16	270.86	269.86	268.16	267.96	267.66	268.06	268.16	268.36	269.26
4	269.96	269.86	270.06	270.66	269.86	268.06	267.86	267.76	268.46	268.26	268.26	269.36
5	270.06	269.76	270.06	270.76	269.86	268.06	267.56	267.96	268.36	268.06	268.16	269.26
6	269.96	269.76	269.96	271.36	269.76	268.46	267.76	267.56	268.36	268.26	268.36	269.26
7	269.96	269.26	269.86	271.56	269.66	268.36	267.66	268.06	268.26	268.16	268.46	269.26
8	269.96	269.46	269.86	271.56	269.66	268.36	267.36	267.96	267.06	267.96	268.36	269.06
9	269.96	269.66	269.76	271.36	269.56	268.36	267.06	267.96	267.26	268.26	268.26	269.16
10	269.86	269.76	269.66	271.66	269.56	268.26	267.46	268.06	267.86	268.26	268.46	269.06
11	269.76	269.46	269.66	271.56	269.46	268.36	267.86	268.06	268.56	268.26	268.56	269.16
12	269.86	269.66	269.66	271.36	269.36	268.36	267.86	267.96	268.86	268.26	268.36	269.16
13	269.76	269.46	269.86	271.36	269.26	268.36	267.76	268.06	268.66	268.26	268.56	269.36
14	269.86	269.46	269.86	271.26	269.06	268.26	268.16	267.96	268.46	268.26	268.56	269.36
15	269.86	269.36	270.06	271.26	269.06	268.26	268.06	267.86	268.26	267.86	268.86	269.56
16	269.86	269.16	270.06	271.16	268.96	268.16	268.06	267.56	268.26	268.26	268.96	269.86
17	269.66	269.26	269.76	271.26	268.86	268.16	268.16	267.96	267.96	267.96	268.86	270.06
18	269.76	269.26	269.86	271.16	268.76	268.16	268.16	267.86	268.26	268.26	268.96	270.56
19	269.76	269.46	269.76	271.06	268.76	268.06	268.06	267.86	268.36	268.36	269.06	270.06
20	269.76	269.56	269.76	271.06	268.76	268.16	268.26	267.36	268.36	268.36	269.26	270.06
21	269.66	269.36	269.66	270.86	268.66	268.06	268.06	267.06	268.26	268.36	269.26	269.96
22	269.66	269.26	269.76	270.76	268.66	267.86	267.76	267.16	268.16	268.56	269.46	269.86
23	269.56	269.36	269.76	270.66	268.56	267.96	268.26	267.26	268.36	268.86	269.56	270.06
24	269.36	269.36	269.86	270.56	268.56	267.86	267.86	266.26	268.06	268.46	269.46	269.96
25	269.26	269.56	269.86	270.56	268.46	267.76	267.96	266.76	268.26	268.16	269.56	269.96
26	269.16	269.66	269.76	270.46	268.36	267.76	267.66	267.06	268.16	268.16	269.46	270.16
27	269.16	269.86	269.96	270.26	268.36	267.96	268.06	267.86	268.06	268.16	269.46	270.26
28	269.46	269.96	270.56	270.26	268.26	267.86	268.26	267.06	268.16	268.36	269.36	270.06
29	269.66	......	270.66	270.26	268.36	267.96	268.16	268.76	268.26	268.26	269.46	269.76
30	269.96	......	270.86	270.06	268.36	267.86	268.36	267.96	268.26	268.36	269.46	269.66
31	269.56	......	270.86	......	268.16	......	267.76	267.96	......	268.36	......	269.66

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River above High Dam, near Oswego, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	283.67	284.77	285.07	286.37	285.77	283.67	283.27	282.47	282.67	282.77	283.27	284.47
2.....	283.97	284.77	285.07	286.17	285.77	283.57	282.87	282.47	282.57	282.97	283.47	284.37
3.....	284.57	284.57	284.97	286.27	285.67	283.57	283.17	282.47	282.57	282.87	283.47	284.27
4.....	284.67	284.67	284.77	286.27	285.67	283.37	282.87	282.57	282.67	282.97	283.47	284.47
5.....	284.87	284.47	284.67	286.37	285.67	283.47	282.97	282.57	282.67	282.87	283.37	284.27
6.....	284.77	284.47	284.57	286.77	285.57	283.97	283.07	282.07	282.77	282.97	283.57	284.17
7.....	284.77	284.07	284.57	287.07	285.27	283.87	283.07	282.67	282.67	282.97	283.67	284.27
8.....	284.57	284.27	884.57	287.17	285.37	283.87	282.77	282.57	282.57	282.87	283.57	284.17
9.....	284.87	284.37	284.67	286.97	285.37	883.87	281.97	282.57	282.77	283.07	283.67	284.17
10.....	284.57	284.37	284.67	287.27	285.27	283.77	282.27	282.47	282.87	283.07	283.77	284.07
11.....	284.67	284.37	284.77	287.17	285.07	283.67	282.37	282.57	282.97	283.17	283.77	284.17
12.....	284.77	284.27	284.77	287.17	284.97	283.87	282.47	282.57	283.17	283.07	283.37	284.17
13.....	284.77	284.37	285.37	287.07	284.87	283.87	282.37	282.47	283.07	283.07	283.87	284.37
14.....	284.67	284.37	285.47	286.97	284.57	283.67	282.77	282.47	282.97	283.07	283.97	284.37
15.....	284.67	284.27	285.67	287.07	284.77	283.67	282.67	282.37	283.07	282.47	283.97	284.67
16.....	284.67	284.07	285.57	286.77	284.67	283.67	282.17	282.27	283.07	283.17	283.97	285.07
17.....	284.47	284.17	285.17	286.77	284.57	283.67	282.77	282.37	282.57	283.07	283.87	284.87
18.....	284.57	284.27	285.37	286.87	284.47	283.47	282.77	282.27	283.07	283.27	283.97	285.37
19.....	284.57	284.27	285.27	286.87	284.47	283.57	282.77	282.27	883.07	883.27	284.07	285.17
20.....	284.57	284.27	285.47	286.77	284.37	283.57	282.77	282.37	283.07	283.27	284.37	285.07
21.....	284.67	284.37	285.37	286.57	284.07	283.47	282.77	281.87	282.97	283.27	284.37	285.07
22.....	284.27	284.17	285.47	286.47	284.37	283.37	282.47	282.07	282.87	283.37	284.57	284.97
23.....	284.37	284.37	285.57	286.27	284.17	283.37	282.27	282.27	283.07	283.97	284.57	285.07
24.....	284.37	284.47	285.47	286.37	284.27	283.27	282.47	281.57	282.67	283.57	284.47	284.97
25.....	284.37	284.67	285.47	286.27	283.97	282.97	282.57	281.97	282.87	283.57	284.67	284.97
26.....	284.37	284.77	285.17	286.17	283.97	283.27	282.47	282.27	282.87	283.37	284.57	285.27
27.....	284.37	284.87	285.57	286.07	283.97	283.27	282.57	281.97	282.77	283.47	284.67	285.37
28.....	284.67	284.97	286.17	285.97	283.67	283.27	282.67	282.17	282.87	283.57	284.47	285.17
29.....	284.47	......	286.27	285.97	283.87	283.37	282.57	282.47	282.97	283.37	284.57	284.87
30.....	284.97	......	286.37	285.57	283.77	283.27	282.17	282.57	282.97	283.37	284.47	284.77
31.....	284.27	......	286.37	......	283.77	......	282.37	282.47	......	283.47	......	284.77

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River below Dam at Minetto, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	290.91	292.01	291.61	293.91	293.36	290.96	290.61	289.91	289.57	290.07	290.27	291.41
2.....	291.11	291.81	292.11	293.81	293.46	290.96	290.61	289.91	289.57	290.07	290.37	291.21
3.....	291.21	291.71	292.01	293.71	292.96	290.96	290.51	289.81	289.67	289.97	290.51	290.91
4.....	291.21	291.71	292.01	293.81	293.06	290.46	290.41	289.81	290.17	289.87	290.41	291.01
5.....	291.31	291.61	291.61	293.81	292.96	291.26	290.31	289.91	289.77	289.77	290.51	291.01
6.....	291.51	291.61	292.21	294.41	292.96	291.16	290.31	289.71	289.57	289.97	290.71	290.91
7.....	291.51	290.81	291.71	294.71	292.56	291.16	290.21	289.71	289.57	289.97	290.51	290.91
8.....	291.91	291.31	291.71	294.71	292.56	291.16	290.21	289.71	289.57	289.77	290.61	290.81
9.....	291.91	291.51	291.61	294.81	292.66	291.16	289.41	289.61	289.97	289.87	290.71	290.91
10.....	291.91	291.41	291.71	294.91	292.46	291.16	290.11	289.61	290.07	289.97	290.71	290.91
11.....	291.91	291.41	291.91	294.81	292.26	291.16	290.31	289.81	289.97	290.07	290.71	290.91
12.....	291.91	291.21	292.01	294.71	292.16	291.16	290.11	289.91	289.97	290.07	290.91	290.91
13.....	291.91	291.21	292.61	294.61	292.06	291.16	290.01	289.91	289.77	290.07	291.21	291.11
14.....	291.91	291.31	292.41	294.51	291.96	290.86	290.11	289.61	289.87	290.07	290.91	291.31
15.....	291.91	291.21	292.91	294.61	291.86	290.96	290.01	289.41	289.97	290.07	290.81	291.61
16.....	291.81	291.11	292.81	294.41	291.96	290.96	289.91	289.41	289.97	290.07	290.81	291.81
17.....	291.81	291.21	292.71	294.41	291.56	290.96	290.61	289.41	290.07	290.07	290.91	291.91
18.....	291.81	291.41	292.81	294.41	291.56	290.76	290.31	289.61	290.17	290.17	291.01	292.11
19.....	291.71	291.41	292.61	294.41	291.56	291.16	290.21	289.61	289.87	290.27	291.01	292.01
20.....	291.71	291.51	292.81	294.21	291.66	290.86	290.21	289.41	289.87	290.17	291.51	291.91
21.....	291.71	291.51	292.61	293.91	291.26	290.76	290.21	289.31	289.97	290.27	291.21	291.91
22.....	291.71	291.51	292.81	294.01	291.66	290.66	290.01	289.11	289.87	290.37	291.41	291.81
23.....	291.61	291.51	292.71	293.61	291.46	290.66	289.81	288.71	289.97	290.47	291.51	291.91
24.....	291.61	291.61	292.71	293.81	291.36	290.56	290.11	288.41	289.97	290.57	291.41	292.01
25.....	291.51	291.61	292.81	293.61	291.16	290.66	290.11	288.61	289.87	290.57	291.51	292.11
26.....	291.51	291.61	292.61	293.51	291.16	290.66	289.71	288.91	289.97	290.47	291.51	292.11
27.....	291.41	291.51	293.01	293.51	291.16	290.46	289.81	289.51	289.97	290.57	291.51	292.11
28.....	291.41	291.51	293.21	293.41	291.06	290.46	289.91	289.51	289.97	290.47	291.31	292.01
29.....	291.41	......	293.61	293.31	291.06	290.66	290.01	289.51	290.07	290.67	291.41	292.01
30.....	291.51	......	293.71	293.11	290.86	290.66	289.91	289.51	290.07	290.97	291.41	291.91
31.....	291.31	......	293.61	......	290.96	......	290.01	289.61	......	290.17	......	291.91

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River above Dam at Minetto, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	300.28	300.98	300.88	301.28	300.88	299.18	298.98	299.78	299.78	299.98	299.98	300.68
2.....	300.48	300.98	301.08	301.18	300.88	299.18	298.98	299.78	299.88	299.98	300.08	300.58
3.....	300.58	300.88	301.08	301.18	300.58	299.28	298.88	299.78	299.88	299.88	300.08	300.38
4.....	300.58	300.88	301.08	301.28	300.68	298.88	298.78	299.68	300.08	299.78	300.08	300.38
5.....	300.68	300.78	300.78	301.28	300.68	299.48	298.68	299.78	299.78	299.68	300.08	300.38
6.....	300.88	300.78	301.08	301.68	300.68	299.28	298.58	299.68	299.78	299.98	300.28	300.38
7.....	300.88	299.98	300.88	301.88	300.38	299.38	298.58	299.78	299.68	299.98	300.28	300.38
8.....	301.08	300.58	300.88	301.98	300.38	299.28	298.58	299.78	299.68	299.68	300.28	300.28
9.....	301.08	300.78	300.88	301.88	300.48	299.28	299.68	299.68	299.98	299.68	300.38	300.38
10.....	301.08	300.68	300.98	302.08	300.38	299.28	300.08	299.68	299.88	299.78	300.28	300.38
11.....	301.08	300.68	300.98	301.98	300.28	299.08	300.18	299.68	299.78	299.88	300.38	300.38
12.....	301.08	300.58	301.08	301.88	300.18	299.28	300.08	299.78	299.88	299.88	300.48	300.38
13.....	301.08	300.58	301.38	301.78	300.08	299.28	299.98	299.78	299.68	299.88	300.68	300.38
14.....	301.08	300.58	300.98	301.78	299.98	299.08	299.98	299.68	299.88	299.88	300.48	300.58
15.....	301.08	300.58	300.68	301.78	299.88	299.18	299.88	299.58	299.98	299.88	300.38	300.78
16.....	300.98	300.48	300.78	301.68	299.98	299.18	299.78	299.58	299.88	299.98	300.38	300.58
17.....	300.98	300.48	300.68	301.68	299.78	299.18	299.38	299.58	299.98	300.08	300.48	300.68
18.....	300.98	300.68	300.78	301.68	299.78	299.98	300.08	299.58	299.98	299.98	300.48	300.78
19.....	300.88	300.78	300.58	301.58	299.78	299.38	300.08	299.68	299.78	300.08	300.48	300.68
20.....	300.88	300.68	300.68	301.58	299.78	299.08	300.08	299.58	299.78	300.08	300.88	300.58
21.....	300.88	300.78	300.48	301.38	299.48	299.08	300.08	299.48	299.88	300.08	300.68	300.58
22.....	300.88	300.78	300.58	301.38	299.78	298.98	299.98	299.38	299.78	300.18	300.78	300.48
23.....	300.78	300.88	300.48	301.18	299.68	298.98	299.78	299.18	299.78	300.28	300.78	300.68
24.....	300.78	300.88	300.58	301.28	299.58	298.88	299.98	297.88	299.88	300.38	300.78	300.68
25.....	300.68	300.88	300.68	301.08	299.38	298.88	298.98	298.58	299.88	300.28	300.88	300.68
26.....	300.68	300.88	300.48	301.08	299.38	298.98	299.68	299.28	299.88	300.28	300.88	300.68
27.....	300.58	300.68	300.88	300.98	299.48	298.78	299.68	299.68	299.88	300.28	300.88	300.78
28.....	300.58	300.68	301.08	300.88	299.38	298.78	299.88	299.68	299.88	300.18	300.58	300.68
29.....	300.58	......	301.18	300.88	299.38	298.98	299.88	299.68	299.98	300.38	300.68	300.58
30.....	300.68	......	301.28	300.68	299.18	298.98	299.78	299.78	299.98	300.48	300.68	300.48
31.....	300.68	......	301.18	......	299.28	......	299.88	299.78	......	299.88	......	300.48

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River opposite Battle Island.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	302.94	304.53	303.93	306.08	304.53	301.14	300.73	300.74	300.83	300.37	301.43	302.71
2.....	303.13	304.46	303.93	305.73	304.33	301.08	300.23	300.63	300.83	301.30	301.41	302.65
3.....	303.33	304.43	303.88	306.08	304.13	301.08	300.33	300.63	300.43	301.00	301.38	301.71
4.....	303.76	304.35	303.88	305.93	303.73	301.33	300.33	300.53	300.84	300.85	301.34	303.13
5.....	304.08	304.23	303.53	305.83	303.63	301.53	300.34	300.53	300.93	300.75	301.18	302.33
6.....	304.23	304.35	303.48	305.83	303.53	301.53	300.38	299.98	301.13	300.53	302.14	302.19
7.....	304.23	304.17	303.34	306.08	303.33	301.44	300.14	300.63	301.43	301.14	302.03	302.13
8.....	304.23	304.13	303.31	306.08	303.53	301.43	300.38	300.53	301.63	300.76	301.53	302.10
9.....	304.23	304.06	303.37	306.43	303.34	301.35	300.14	300.53	301.73	301.55	301.77	302.10
10.....	304.13	304.03	303.23	307.23	303.28	301.43	300.38	300.53	301.53	301.17	301.89	301.31
11.....	304.14	304.08	303.28	307.17	303.05	301.43	300.63	300.63	301.88	301.28	301.84	302.41
12.....	304.23	304.08	303.53	307.08	302.93	301.63	300.74	300.53	301.73	301.25	301.16	302.17
13.....	304.23	304.08	304.23	307.08	302.93	301.53	300.83	301.08	301.74	301.15	302.51	302.49
14.....	304.28	303.95	304.34	306.96	302.83	301.44	300.83	300.23	301.66	301.22	301.97	302.73
15.....	304.03	303.74	304.68	306.93	302.94	301.33	300.83	300.13	301.53	300.25	302.09	303.16
16.....	304.05	303.63	304.73	306.63	302.44	301.13	300.63	300.08	301.43	301.56	302.15	303.62
17.....	304.08	333.53	304.84	306.53	302.33	301.13	300.93	299.93	301.13	301.27	301.90	303.33
18.....	304.08	303.63	304.85	306.73	302.34	300.83	301.14	299.84	301.78	301.35	302.31	304.17
19.....	304.23	303.53	303.84	306.43	302.33	300.94	301.15	299.73	301.66	301.40	*a*	303.81
20.....	304.24	303.93	304.33	306.33	302.43	300.83	301.23	299.53	301.63	301.13	303.12	303.68
21.....	304.33	303.73	304.23	306.33	302.23	300.78	301.28	299.63	301.63	301.40	302.75	303.58
22.....	304.13	303.53	304.34	306.31	302.08	300.73	301.28	299.53	301.53	301.00	303.01	303.51
23.....	303.93	303.53	304.33	305.73	301.93	300.63	300.74	299.53	301.43	302.03	303.00	303.95
24.....	303.74	333.53	304.33	305.53	301.85	300.53	300.77	299.23	301.03	301.68	302.97	303.28
25.....	303.43	303.74	304.33	305.43	301.66	300.53	301.04	299.23	301.63	301.50	302.79	303.93
26.....	303.45	303.53	304.13	305.14	301.63	300.65	301.03	299.23	301.43	301.13	302.08	304.17
27.....	303.48	333.74	304.83	304.95	301.63	300.73	300.96	299.53	301.13	301.34	302.79	304.18
28.....	303.68	303.88	305.13	304.73	301.35	300.83	300.93	299.93	300.93	301.60	302.87	304.03
29.....	304.03	......	305.43	304.66	301.33	300.83	300.88	300.53	300.83	300.59	302.83	303.93
30.....	304.53	......	305.63	304.63	301.25	300.73	300.63	300.84	300.63	301.79	302.31	303.73
31.....	304.65	......	306.08	......	301.23	......	300.85	300.88	......	301.58	......	302.73

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River below Battle Island Dam, near Fulton, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	303.99	304.94	304.44	306.04	305.24	303.74	303.94	303.84	303.44	302.94	303.66	304.49
2	304.14	304.39	304.49	305.84	305.24	303.74	303.54	303.69	303.44	303.79	303.64	304.44
3	304.49	304.54	304.54	306.04	305.09	303.74	303.94	303.54	302.59	303.74	303.64	304.04
4	304.69	304.54	304.49	305.89	305.14	393.74	303.94	303.49	303.59	303.74	303.72	304.59
5	304.64	304.54	304.14	306.04	305.09	303.84	303.94	303.59	303.54	303.79	303.15	304.24
6	304.64	304.79	304.29	306.84	304.99	303.94	303.94	303.04	303.54	303.64	303.95	304.12
7	304.64	304.69	304.24	307.34	304.64	303.94	303.94	303.74	303.54	303.69	303.84	303.98
8	304.49	304.64	304.14	307.34	304.64	303.94	303.94	303.69	303.54	303.04	303.74	304.09
9	304.54	304.74	304.24	307.24	304.64	303.89	303.54	303.44	303.59	303.79	303.94	304.13
10	304.59	304.54	304.24	307.69	304.64	303.79	304.24	303.44	303.44	303.74	304.02	303.82
11	304.64	304.54	304.34	307.49	304.54	303.74	304.14	303.59	304.59	303.74	304.96	304.20
12	304.69	304.24	304.34	307.44	304.39	303.94	304.01	303.54	303.64	303.79	304.66	304.14
13	304.64	304.44	304.99	307.24	304.29	303.99	303.99	302.84	303.59	303.64	304.19	304.22
14	304.54	304.39	304.89	307.14	304.14	303.94	303.84	303.74	303.64	303.64	304.02	304.34
15	304.39	304.24	305.19	307.14	304.44	303.84	303.79	303.49	303.69	303.14	304.03	304.54
16	304.34	304.04	305.14	306.59	304.24	303.74	303.34	303.34	303.74	303.24	304.04	304.68
17	304.44	304.19	305.04	307.24	304.24	303.79	303.99	303.39	302.99	303.69	303.94	304.66
18	304.54	304.14	305.14	306.94	304.24	303.54	304.14	303.24	303.94	303.59	304.12	304.96
19	304.54	304.14	304.59	306.89	304.19	303.94	304.09	303.04	303.74	303.64	303.82	304.80
20	304.54	304.49	304.99	306.64	304.14	303.89	304.19	302.74	303.69	303.64	304.42	304.73
21	304.54	304.34	304.89	306.54	303.94	303.84	304.14	303.39	303.64	303.69	304.27	304.74
22	304.04	304.59	304.94	306.44	304.24	303.84	304.04	303.34	303.54	303.54	304.35	304.52
23	304.44	304.44	304.84	306.29	304.14	303.84	302.94	303.34	303.59	304.04	304.35	304.82
24	304.19	304.44	304.84	306.04	303.99	303.83	304.19	303.39	303.04	303.84	304.36	304.64
25	304.19	304.44	304.84	305.94	303.94	303.44	303.84	303.39	303.89	303.74	304.34	304.89
26	304.14	304.14	304.59	305.74	303.89	303.94	303.94	303.84	303.74	303.64	304.14	304.94
27	304.24	304.84	305.34	305.59	303.89	303.79	303.64	303.14	303.54	303.64	304.54	304.94
28	304.49	304.54	305.64	305.44	303.54	303.94	303.69	303.74	303.44	303.69	304.36	304.74
29	304.24	......	305.94	305.39	303.84	303.99	303.74	303.64	303.49	303.69	304.56	304.44
30	304.54	......	306.04	305.04	303.74	304.04	303.54	303.54	303.54	303.94	304.32	304.44
31	304.84	......	306.09	......	303.74	......	303.89	303.59	......	303.94	......	304.14

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River above Battle Island Dam, near Fulton, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	309.88	310.78	310.38	311.68	311.18	......	......	310.58	310.48	310.88	310.86	311.30
2	310.08	310.73	310.48	311.58	311.08	......	......	310.53	310.48	310.78	310.86	311.28
3	310.28	310.48	310.58	311.78	311.13	......	......	310.88	309.58	310.78	310.88	310.96
4	310.43	310.48	310.58	311.58	311.08	......	......	310.93	310.53	310.78	310.96	311.47
5	310.48	310.58	310.38	311.68	311.08	......	......	310.38	310.38	310.88	310.28	311.16
6	310.58	310.53	310.38	312.03	311.03	......	......	310.08	310.08	310.78	311.18	311.06
7	310.58	310.38	310.38	312.28	310.68	......	......	310.53	310.48	310.68	311.08	311.08
8	310.73	310.43	310.33	312.38	310.58	......	......	310.38	310.48	310.13	310.88	311.06
9	310.58	310.48	310.38	312.28	310.03	......	......	310.18	310.48	310.88	311.08	311.07
10	310.58	310.48	310.43	312.58	310.58	......	......	310.38	310.48	310.78	311.18	310.84
11	310.63	310.28	310.48	312.48	310.48	......	......	310.38	310.68	310.78	311.09	311.16
12	310.68	310.23	310.58	312.38	310.38	......	......	310.28	310.63	310.78	310.85	311.08
13	310.68	310.38	311.08	312.28	310.28	......	......	309.98	310.58	310.68	311.33	311.16
14	310.58	310.28	311.03	312.28	*a*	......	......	310.48	310.68	310.88	311.28	311.27
15	310.48	310.18	311.23	312.18	......	......	......	310.43	310.68	310.38	311.19	311.46
16	310.53	310.08	311.28	311.93	......	......	......	310.28	310.68	310.88	311.23	311.58
17	310.38	310.18	311.38	312.18	......	......	......	310.33	308.98	310.78	311.12	311.54
18	310.58	310.28	311.18	312.08	......	......	......	310.18	310.93	310.78	311.29	311.67
19	310.63	310.23	310.88	311.88	......	......	......	310.18	310.38	310.83	311.01	311.54
20	310.68	310.48	311.08	311.68	......	......	......	309.88	310.58	310.88	311.48	311.49
21	310.68	310.43	311.08	311.58	......	......	......	310.18	310.58	310.93	311.38	311.50
22	310.38	310.48	311.08	311.48	......	......	......	310.33	310.53	310.78	311.48	311.47
23	310.58	310.48	310.98	*a*	......	......	310.03	310.28	310.28	311.18	311.48	311.46
24	310.38	310.53	310.98	......	......	......	310.78	310.28	310.08	311.08	311.48	311.40
25	310.43	310.58	310.98	......	......	......	310.38	310.33	310.93	310.93	311.46	311.63
26	310.38	310.28	311.08	......	......	......	310.48	310.38	310.68	310.78	311.08	311.65
27	310.43	310.83	311.38	......	......	......	310.23	310.48	310.58	310.83	311.58	311.64
28	310.48	310.38	311.58	......	......	......	310.28	310.58	310.48	310.93	311.38	311.49
29	310.38	......	311.58	......	......	......	310.48	310.48	310.53	310.78	311.36	311.33
30	310.48	......	311.58	......	......	......	310.28	310.53	310.58	311.18	311.14	311.28
31	310.58	......	311.68	......	......	......	310.58	310.58	......	311.18	......	311.08

a No record from April 23 to April 30, inclusive, and from May 14 to July 22, inclusive.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River above Battle Island Dam, West Side, near Fulton, N. Y.

DAY.	Oct.	Nov.	Dec.
1911.			
1	......	310.87	311.30
2	......	310.86	311.24
3	......	310.91	310.91
4	......	310.95	311.44
5	......	310.24	311.13
6	......	311.18	311.06
7	......	311.06	311.06
8	......	310.89	311.06
9	......	311.07	311.04
10	......	311.14	310.82
11	311.76	311.05	311.13
12	311.76	310.83	311.06
13	311.36	311.38	311.18
14	311.26	311.17	311.26
15	311.46	311.18	311.44
16	311.96	311.04	311.58
17	313.66	311.13	311.54
18	311.76	311.30	311.66
19	311.86	311.16	311.56
20	310.86	311.48	311.51
21	310.76	311.36	311.46
22	310.16	311.48	311.45
23	311.06	311.44	311.53
24	310.96	311.48	311.36
25	310.91	311.44	311.64
26	310.77	311.04	311.64
27	310.84	311.56	311.62
28	310.94	311.36	311.50
29	310.31	311.28	311.46
30	311.10	311.16	311.26
31	310.97	......	311.04

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River at Mouth of Waterhouse Creek, Fulton, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	309.87	310.87	311.02	312.12	311.72	309.97	309.87	310.37	310.47	309.97	310.87	311.22
2	310.27	310.87	310.97	311.87	311.72	309.97	309.87	310.47	310.37	310.57	310.47	311.27
3	310.67	310.82	311.02	312.17	311.57	309.97	309.77	310.52	310.57	310.77	310.77	310.97
4	310.77	311.32	310.97	311.87	311.47	309.77	309.37	310.22	310.27	310.52	311.02	311.47
5	310.97	310.97	310.62	312.07	311.42	309.47	309.97	310.32	310.27	310.52	310.17	311.17
6	310.72	311.22	310.27	312.47	311.42	310.07	309.97	310.47	310.37	310.37	311.27	311.17
7	310.82	310.97	310.57	312.87	311.17	309.97	309.77	310.42	310.37	310.67	311.07	311.17
8	310.67	311.17	310.57	312.97	311.57	310.07	309.72	310.37	310.37	309.87	311.07	311.12
9	310.82	311.22	310.57	312.87	311.17	310.17	309.37	310.37	310.47	310.87	311.12	311.17
10	310.52	311.12	310.47	313.07	311.32	310.12	309.97	310.07	310.17	310.72	311.12	310.87
11	310.77	311.02	310.72	312.97	310.97	309.87	309.97	310.42	310.12	310.67	311.07	311.77
12	310.77	310.77	310.77	312.87	310.97	310.47	309.52	310.22	310.57	310.67	310.77	311.17
13	310.77	310.97	311.02	312.87	310.97	310.07	309.72	309.67	310.57	310.67	311.27	311.22
14	310.77	310.87	311.22	312.77	310.47	310.07	309.67	310.37	310.27	310.77	311.17	311.17
15	310.27	310.87	311.42	312.87	311.07	310.07	309.57	310.27	310.57	310.17	311.17	311.52
16	310.67	310.97	311.42	312.67	310.72	309.97	309.27	309.87	310.77	310.87	311.17	311.72
17	310.57	310.92	311.97	312.77	310.67	309.97	309.97	310.02	310.97	310.67	311.12	311.67
18	310.62	311.02	311.42	312.62	310.62	309.67	309.67	310.07	310.72	310.57	311.22	311.97
19	310.72	310.77	311.87	312.47	310.72	310.07	309.77	309.97	310.72	310.87	311.17	310.97
20	310.57	310.87	311.27	312.52	310.67	310.07	310.67	309.77	310.67	310.77	311.47	310.42
21	310.67	310.97	311.17	312.27	310.17	309.82	310.67	310.27	310.47	310.77	311.42	311.57
22	310.27	310.92	311.17	312.22	310.77	309.77	310.67	310.27	310.47	310.77	311.52	311.52
23	310.62	310.97	311.27	312.97	310.52	309.92	309.77	310.07	310.32	311.17	310.57	311.67
24	310.57	311.02	311.27	312.17	310.47	309.67	310.77	309.97	309.87	310.77	311.47	311.57
25	310.52	311.02	311.17	311.92	310.17	309.47	310.32	309.97	310.77	310.97	311.47	311.67
26	310.47	310.87	311.07	311.87	310.22	309.87	310.37	310.17	310.57	310.77	310.97	311.97
27	310.47	311.07	311.42	311.77	310.27	309.82	310.47	309.87	310.52	310.97	311.62	311.77
28	310.62	311.02	311.87	311.72	309.97	309.77	310.47	310.47	310.47	310.97	311.37	311.67
29	310.37	......	311.87	311.67	310.22	309.97	310.47	310.47	310.47	310.27	311.37	311.57
30	310.77	......	311.87	311.47	309.72	309.87	310.27	310.27	310.47	310.97	311.07	311.57
31	310.67	......	312.18	......	310.17	......	310.52	310.37	......	310.92	......	311.37

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River above Lower Dam at Fulton, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.*	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1.....	333.05	334.50	336.06	336.70	335.78	335.02	332.50	332.40	331.45	331.90	331.80	333.30
2.....	333.50	334.45	336.78	336.68	335.90	334.92	332.52	331.98	331.55	332.20	331.60	333.30
3.....	332.85	334.45	337.18	336.68	335.70	334.85	333.32	332.15	331.72	332.22	331.90	333.25
4.....	332.25	334.20	337.35	336.72	335.78	334.80	333.75	331.42	331.78	331.75	331.75	334.45
5.....	332.10	334.35	337.58	336.55	335.68	335.15	333.25	331.40	331.92	331.70	331.30	333.50
6.....	332.35	334.55	337.72	336.45	335.58	335.35	332.10	332.12	331.72	331.40	333.25	333.40
7.....	332.50	334.30	338.06	336.36	335.52	335.25	331.75	331.20	331.75	331.40	332.42	333.00
8.....	332.50	334.00	338.05	336.20	335.78	335.20	330.95	331.90	331.78	332.10	332.30	333.00
9.....	333.00	333.95	338.10	336.12	335.66	335.24	331.30	331.45	332.55	332.20	332.25	332.70
10.....	331.75	333.90	338.15	336.12	335.52	335.20	332.80	331.90	332.25	331.75	332.25	332.30
11.....	332.55	333.90	338.12	336.28	335.35	335.15	332.12	331.50	332.58	331.85	332.25	333.90
12.....	332.45	333.90	338.10	336.10	335.04	335.40	330.75	331.42	332.40	331.80	333.25	332.80
13.....	332.15	334.65	338.12	335.95	334.96	335.02	331.62	331.72	332.42	331.65	334.40	332.35
14.....	332.10	334.15	338.02	335.75	334.96	334.70	330.70	332.00	331.70	332.35	333.10	332.45
15.....	332.20	333.96	337.90	335.60	335.18	334.58	331.18	332.38	331.65	331.90	333.05	331.90
16.....	333.10	334.12	337.82	335.78	334.95	334.62	330.65	331.72	331.80	331.62	332.90	332.10
17.....	331.95	333.85	337.70	335.82	334.65	334.45	331.78	331.32	331.90	331.82	333.10	332.35
18.....	332.50	334.04	337.52	335.82	334.68	333.70	331.52	331.98	331.85	332.10	333.20	334.40
19.....	332.55	333.92	337.45	335.55	334.49	334.60	331.02	332.08	332.30	332.00	333.05	332.45
20.....	332.65	334.45	337.38	335.42	334.55	334.25	331.10	332.05	331.60	332.10	334.40	331.80
21.....	332.85	334.38	337.38	335 30	334.75	333.85	330.88	333.00	331.70	331.95	333.65	331.85
22.....	333.00	334.18	337.22	335.19	335.05	333.80	331.75	332.38	332.02	332.10	333.05	332.05
23.....	334.65	334.18	337.24	335.19	335.05	333.75	330.90	331.75	331.28	332.05	333.15	332.42
24.....	334.50	334.18	337.05	335.58	334.71	333.45	330.98	331.38	332.00	332.25	333.15	332.25
25.....	334.10	334.18	337.02	335.55	334.95	333.45	331.95	332.05	332.02	331.95	333.05	333.65
26.....	334.30	334.02	336.94	335.48	334.95	333.70	331.20	331.65	332.20	331.85	333.15	333.60
27.....	334.55	334.98	336.95	335.32	335.12	333.40	331.60	331.42	331.10	332.12	334.40	332.88
28.....	334.60	335.32	337.00	335.40	335.22	333.05	331.50	331.68	331.50	331.50	333.80	332.22
29.....	334.50	......	336.85	335.68	335.25	333.00	331.98	332.05	331.70	332.00	333.55	332.70
30.....	335.05	......	336.82	335.74	335.62	332.90	331.35	331.58	331.85	332.48	333.40	333.02
31.....	335.00	......	336.82	......	335.12	......	331.42	331.48	......	332.40	......	332.75

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River above Lower Dam at Fulton, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	334.55	334.48	334.60	336.60	335.95	333.32	333.85	333.30	333.85	333.70	333.75	333.90
2.....	333.75	334.60	334.75	336.85	335.80	333.22	334.80	333.25	333.90	333.90	333.82	333.20
3.....	334.45	334.48	334.80	336.05	335.82	333.25	334.20	333.20	333.75	333.40	333.98	335.15
4.....	334.62	334.60	334.60	336.30	335.85	334.30	334.75	333.90	333.70	333.00	333.90	333.80
5.....	334.75	335.15	335.60	336.40	335.72	333.62	334.18	333.30	333.80	333.60	335.40	332.88
6.....	334.30	335.25	334.62	336.95	335.68	334.10	332.25	333.90	333.52	334.20	334.63	332.80
7.....	334.65	333.02	334.20	337.10	336.02	333.48	332.05	333.50	333.35	334.95	334.40	332.65
8.....	335.20	333.58	334.15	337.15	335.52	333.55	332.90	333.35	333.75	335.05	333.95	333.60
9.....	335.10	334.08	333.95	*a*	335.30	333.35	334.40	333.60	334.00	334.40	334.00	333.55
10.....	334.52	333.92	334.02	337.18	335.25	333.40	332.45	333.70	335.45	333.80	334.25	335.40
11.....	334.75	333.98	334.05	337.10	335.22	334.60	332.35	333.50	333.15	334.22	334.15	334.35
12.....	334.52	335.20	335.75	337.05	335.02	334.25	331.35	333.32	333.70	333.78	335.80	333.80
13.....	334.52	333.90	335.30	337.00	334.85	333.20	330.30	334.20	333.10	333.15	334.80	334.40
14.....	334.20	333.90	335.35	336.95	335.55	333.05	331.20	333.90	333.40	333.85	334.10	334.60
15.....	335.60	333.60	335.60	336.95	335.05	333.05	332.10	333.50	333.70	335.08	334.42	335.20
16.....	334.50	333.38	335.70	337.08	334.68	333.00	334.50	333.05	333.35	334.55	334.42	335.60
17.....	334.55	333.78	335.55	336.85	334.38	332.88	333.70	334.00	334.65	333.90	334.48	336.30
18.....	334.62	333.82	335.60	336.82	334.30	333.85	332.70	333.85	334.78	334.08	334.80	335.65
19.....	334.50	335.18	335.95	336.80	334.25	333.15	333.40	333.40	333.50	334.10	336.10	335.30
20.....	334.30	334.68	335.30	336.70	334.25	333.18	333.98	333.75	334.62	334.00	335.48	335.45
21.....	334.30	334.28	335.22	336.65	335.12	333.70	332.50	333.80	333.70	334.00	334.80	335.35
22.....	335.10	334.15	335.35	336.65	334.50	333.00	331.55	333.80	333.65	335.60	334.92	335.30
23.....	334.35	334.25	335.40	336.65	334.05	333.60	334.85	333.50	333.58	334.82	335.55	335.45
24.....	333.90	334.58	335.45	336.45	334.12	333.15	333.85	333.72	334.90	334.12	335.60	336.40
25.....	333.82	334.60	335.50	336.32	333.68	335.05	332.65	333.65	334.15	333.65	335.40	336.40
26.....	333.90	335.55	335.95	336.28	333.70	333.95	332.52	334.30	333.68	335.52	335.28	335.70
27.....	334.00	335.08	335.75	336.12	333.68	333.20	332.10	333.85	333.80	334.70	334.18	335.80
28.....	334.20	334.68	336.28	336.10	334.80	334.08	331.88	334.30	333.60	334.15	334.10	335.65
29.....	335.10	......	336.25	336.15	334.25	334.25	332.80	333.80	333.75	335.00	334.00	335.40
30.....	334.78	......	336.35	336.22	333.62	333.58	335.05	333.75	333.38	334.55	333.80	335.15
31.....	333.85	......	336.50	......	333.65	......	334.40	333.70	......	334.00	......	335.85

a Above gage.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River above Oswego Falls Dam, Fulton, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	349.20	348.90	349.00	......	349.90	347.40	347.10	347.20	348.80	348.90	348.30	349.30
2.....	348.10	348.60	348.50	351.00	349.90	347.00	348.40	347.30	348.80	348.80	348.10	349.30
3.....	348.30	348.40	348.30	350.10	349.60	347.30	347.60	347.10	349.60	348.20	348.30	350.40
4.....	349.20	348.50	348.50	349.80	349.70	348.70	348.10	347.20	349.40	348.30	348.30	348.90
5.....	349.40	350.00	349.70	350.00	349.60	348.40	347.10	347.20	348.80	348.40	349.80	348.00
6.....	349.40	349.20	347.80	351.00	349.60	347.50	346.70	348.30	348.90	348.40	348.90	347.60
7.....	348.90	348.10	347.85	350.90	350.60	347.40	347.00	348.30	348.80	349.40	348.40	347.20
8.....	350.00	348.90	348.20	350.80	349.60	347.60	347.10	348.90	349.10	348.80	348.40	347.10
9.....	349.45	348.90	348.00	351.80	349.30	347.30	348.30	348.85	349.10	348.30	348.20	347.10
10.....	348.90	348.50	347.70	351.00	349.30	347.40	346.90	348.90	349.70	348.30	348.50	349.00
11.....	348.50	348.30	347.90	350.80	349.30	349.00	346.90	348.80	349.30	348.20	348.80	347.40
12.....	348.50	349.60	349.90	351.00	349.10	347.70	347.10	348.80	349.00	348.30	350.20	347.10
13.....	348.50	348.30	348.90	350.70	348.90	347.20	347.20	349.20	348.90	348.40	349.10	347.40
14.....	348.50	348.15	348.70	350.50	350.10	347.40	347.10	349.00	348.90	348.40	348.70	347.70
15.....	350.00	348.15	349.10	350.70	349.00	347.50	347.10	348.60	348.40	349.50	349.20	348.20
16.....	348.80	348.60	349.20	351.70	348.70	347.10	347.80	348.00	348.40	348.90	348.90	348.60
17.....	348.80	348.00	348.50	350.70	348.50	347.10	346.80	348.40	349.60	348.10	348.70	350.20
18.....	348.80	348.30	348.90	350.60	348.50	348.90	347.00	348.50	349.20	348.30	349.10	349.00
19.....	349.20	349.70	350.00	350.60	348.50	347.10	347.00	348.40	348.40	348.30	350.40	348.70
20.....	348.20	348.70	348.80	350.40	348.40	346.80	347.00	348.50	348.40	348.40	349.65	348.90
21.....	348.30	348.50	348.80	350.30	349.60	346.60	347.00	348.20	348.30	348.60	349.95	348.80
22.....	349.20	348.40	348.80	350.20	348.50	346.70	347.00	348.50	348.30	350.10	350.20	348.50
23.....	348.90	348.30	348.80	351.30	348.10	346.90	347.70	348.40	348.10	349.30	350.10	348.90
24.....	348.30	348.15	349.00	350.20	348.00	346.90	347.10	348.10	349.50	348.90	350.00	349.94
25.....	348.40	348.20	348.90	349.90	348.70	348.40	347.00	348.60	349.90	348.30	349.74	350.30
26.....	348.10	348.70	350.10	349.90	347.60	347.60	347.20	348.60	348.40	348.40	350.50	349.10
27.....	348.10	348.60	349.30	349.90	347.50	346.70	347.30	349.00	348.40	348.20	349.60	349.00
28.....	348.30	348.90	349.80	349.95	349.10	347.10	347.20	348.90	348.40	348.30	349.50	348.90
29.....	348.80	......	349.85	349.90	348.10	346.90	347.10	348.75	348.40	349.90	349.20	348.20
30.....	348.50	......	349.80	350.70	348.60	348.20	347.70	348.70	348.50	348.30	349.70	348.50
31.....	348.50	......	349.90	......	347.30	......	347.00	348.65	......	348.00	......	349.50

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River at Mouth of Ox Creek, near Fulton, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	350.01	351.61	350.51	351.81	351.41	348.61	348.01	347.71	349.11	349.71	348.81	350.41
2.....	349.51	351.11	350.21	352.21	351.21	348.51	348.91	347.61	349.11	349.21	348.81	350.31
3.....	350.11	350.41	350.11	351.71	351.21	348.51	348.61	347.61	349.81	348.71	349.01	350.71
4.....	350.51	350.71	350.11	351.61	351.21	349.21	348.71	347.61	349.81	349.01	349.11	350.21
5.....	350.51	350.91	350.41	351.81	351.11	348.71	348.21	347.61	349.31	348.91	350.01	349.11
6.....	350.31	350.71	349.91	352.41	351.01	348.81	348.01	348.31	349.31	348.91	349.41	349.11
7.....	350.51	350.41	349.81	352.81	351.41	348.91	348.01	349.01	349.11	349.01	349.21	348.71
8.....	351.01	350.51	349.71	352.91	350.91	348.81	348.11	349.01	349.31	349.41	349.21	348.71
9.....	350.91	350.71	349.41	353.31	350.71	348.91	348.61	349.11	349.31	349.11	349.21	348.71
10.....	350.61	350.61	349.51	353.11	350.61	349.01	347.91	349.11	350.11	349.01	349.41	349.41
11.....	350.51	350.41	349.71	353.01	350.51	349.51	348.01	349.11	349.71	349.01	349.51	349.01
12.....	350.41	350.71	350.71	352.91	350.31	348.81	348.01	349.11	349.31	349.01	350.31	348.71
13.....	350.41	350.51	350.61	352.81	350.11	348.81	348.01	349.51	349.31	349.01	349.91	348.71
14.....	350.41	350.31	350.61	352.71	350.61	348.71	347.81	349.21	349.31	349.01	349.71	349.31
15.....	350.81	350.31	350.91	352.71	350.11	348.51	347.81	349.01	348.81	349.61	349.71	349.61
16.....	350.41	350.31	350.91	353.11	349.91	348.41	348.41	348.91	348.81	349.21	349.61	350.11
17.....	350.61	350.31	352.51	352.71	349.71	348.61	347.81	348.81	349.91	349.01	349.61	350.81
18.....	350.51	350.21	350.81	352.61	349.61	349.31	347.81	348.81	349.51	349.01	349.81	350.41
19.....	350.41	350.51	351.11	352.51	349.51	348.41	347.71	348.71	349.11	349.01	350.71	350.31
20.....	350.41	350.41	350.51	352.41	349.61	348.21	347.71	349.01	348.81	349.01	350.41	350.21
21.....	350.41	350.31	350.51	352.21	350.11	348.31	347.81	348.61	348.81	349.01	350.41	350.21
22.....	350.41	350.51	350.61	352.11	349.51	348.41	347.81	348.91	348.71	350.31	350.61	350.01
23.....	350.21	350.61	350.71	352.41	349.51	348.41	348.31	348.81	348.71	349.91	350.51	350.41
24.....	350.01	350.61	350.61	351.91	349.31	348.21	347.71	348.71	349.81	349.41	350.51	350.71
25.....	349.81	350.41	350.61	351.71	349.11	349.11	347.71	348.71	349.41	348.91	350.51	350.91
26.....	349.61	350.61	351.01	351.61	349.01	348.71	347.71	348.81	349.21	349.11	350.91	350.71
27.....	349.51	350.11	351.01	351.61	349.01	348.01	347.71	349.41	349.11	349.11	350.51	350.51
28.....	349.91	350.31	351.51	351.51	349.51	348.41	347.71	349.61	349.11	349.21	350.41	350.51
29.....	350.41	......	351.71	351.41	349.21	348.31	347.81	349.41	349.01	350.41	350.41	350.31
30.....	350.21	......	351.71	351.71	349.01	348.01	348.21	349.21	349.01	349.11	350.51	350.71
31.....	351.11	......	351.81	......	348.91	......	347.71	349.11	......	348.91	......	351.41

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River at Hinmansville Bridge, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	352.74	354.24	353.64	355.24	354.74	351.24	351.04	350.14	350.14	350.64	350.94	352.34
2.....	352.74	354.64	353.54	355.04	354.64	351.54	350.94	350.24	350.04	350.74	350.84	352.14
3.....	353.34	355.64	353.54	355.24	354.44	351.34	350.84	350.14	350.34	350.84	350.74	351.94
4.....	353.64	355.44	353.54	354.94	354.34	351.24	350.74	350.14	350.54	350.74	350.84	351.84
5.....	353.84	355.24	353.44	355.14	354.24	351.74	350.64	350.24	350.44	350.64	350.94	351.74
6.....	354.04	355.64	353.54	355.84	354.14	351.84	350.64	350.14	350.44	350.54	351.04	351.64
7.....	354.04	356.14	353.44	356.24	354.04	351.74	350.74	350.34	350.54	350.84	351.34	351.54
8.....	353.94	356.64	353.44	356.44	353.94	351.64	350.64	350.24	350.64	350.84	351.24	351.34
9.....	354.14	357.64	353.34	356.54	353.74	351.54	350.54	350.34	350.84	350.94	351.14	351.54
10.....	353.84	358.74	353.34	356.54	353.84	351.44	350.54	350.24	350.64	350.84	351.24	351.44
11.....	353.84	358.14	353.24	356.44	353.74	351.64	350.44	350.34	350.54	350.94	351.34	351.54
12.....	353.74	357.44	353.14	356.34	353.54	351.64	350.54	350.24	350.74	350.84	351.44	351.64
13.....	353.64	356.64	353.14	356.34	353.34	351.54	350.44	350.14	350.84	350.84	351.44	351.74
14.....	353.44	354.74	353.24	356.24	353.04	351.44	350.34	349.84	350.84	350.74	351.54	351.94
15.....	353.34	354.14	353.24	356.24	353.04	351.34	350.54	349.84	350.84	350.94	351.44	352.44
16.....	353.64	354.04	353.34	*a*	352.94	351.34	350.24	349.94	350.74	351.04	351.34	352.94
17.....	353.94	353.64	353.34	*a*	352.84	351.24	350.54	349.94	350.64	350.84	351.54	352.94
18.....	354.04	353.44	353.44	*a*	352.54	351.34	350.64	349.84	350.54	351.04	351.64	352.74
19.....	354.04	353.24	353.34	*a*	352.44	351.24	350.54	349.74	350.44	351.04	351.84	352.54
20.....	353.74	353.14	353.44	*a*	352.34	351.14	350.54	349.74	350.54	350.94	351.94	352.44
21.....	353.34	353.34	353.54	*a*	352.24	251.14	350.64	349.64	350.64	350.84	352.14	352.34
22.....	353.14	354.04	353.54	*a*	352.24	351.04	350.54	349.74	350.74	350.84	352.34	352.54
23.....	353.14	354.44	353.64	*a*	352.14	351.14	350.34	349.84	350.84	350.94	352.24	352.74
24.....	352.74	353.94	353.74	*a*	352.24	351.04	350.24	349.84	350.84	350.94	352.54	352.94
25.....	352.64	353.84	353.84	*a*	351.94	351.04	350.14	350.04	350.74	350.74	352.34	353.34
26.....	352.34	353.84	353.64	*a*	351.74	351.04	350.24	350.14	350.64	350.84	352.44	353.54
27.....	352.24	353.84	354.14	*a*	351.64	351.04	350.34	350.34	350.54	350.84	352.54	353.64
28.....	352.24	353.64	354.64	*a*	351.74	351.14	350.34	350.34	350.44	350.94	352.64	353.84
29.....	352.74	......	355.04	*a*	351.54	351.14	350.34	350.24	350.64	350.84	352.54	353.94
30.....	353.64	......	365.04	*a*	351.44	351.04	350.24	350.14	350.54	350.94	352.34	353.54
31.....	353.84	......	355.14	......	351.34	......	350.14	350.14	......	350.94	......	353.74

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River below Dam at Phoenix, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	355.15	355.95	356.15	358.35	357.15	353.95	353.85	353.75	*a*	*a*	353.15	354.35
2.....	355.45	355.45	355.95	359.15	357.05	353.95	353.95	353.65	*a*	*a*	353.15	354.25
3.....	355.75	355.75	355.45	359.35	356.95	353.95	353.95	353.65	*a*	*a*	353.25	354.15
4.....	356.15	356.15	355.15	357.95	356.95	353.85	353.85	353.65	*a*	*a*	353.25	354.05
5.....	356.65	356.45	355.05	358.15	356.85	354.25	353.85	353.70	*a*	*a*	353.35	353.95
6.....	356.95	*a*	354.95	358.95	356.75	354.20	353.85	353.35	*a*	*a*	353.45	353.95
7.....	356.95	359.75	354.95	359.45	356.45	354.20	353.80	353.75	*a*	*a*	353.55	353.85
8.....	356.75	360.05	354.95	359.75	356.45	354.15	353.80	353.65	*a*	*a*	352.95	353.75
9.....	356.95	359.55	354.75	359.75	356.35	354.20	353.55	353.45	*a*	*a*	353.65	353.65
10.....	357.35	359.15	354.95	359.95	356.05	354.15	352.80	353.45	*a*	*a*	353.65	353.65
11.....	356.55	358.95	355.15	359.75	355.85	354.20	353.80	353.45	*a*	*a*	353.70	353.75
12.....	356.15	357.95	355.75	359.65	355.65	354.20	353.75	353.35	*a*	*a*	353.85	353.85
13.....	355.75	357.35	356.15	359.65	355.35	354.15	353.65	353.10	*a*	*a*	353.75	354.05
14.....	355.45	355.95	356.45	359.45	355.25	354.05	353.75	353.65	*a*	*a*	353.75	354.35
15.....	355.55	355.75	356.75	359.45	355.25	354.00	353.70	353.55	*a*	*a*	353.85	354.65
16.....	356.15	355.55	356.75	359.35	355.10	354.15	353.45	353.45	*a*	*a*	353.75	355.15
17.....	356.75	355.15	356.85	359.35	354.90	353.85	353.75	353.55	*a*	*a*	353.85	355.15
18.....	356.75	355.05	356.45	359.25	354.85	354.00	353.55	353.65	*a*	*a*	353.95	355.15
19.....	356.45	354.95	356.45	359.15	354.75	353.95	353.85	353.55	*a*	*a*	353.95	355.05
20.....	356.05	355.35	356.35	358.95	354.65	353.95	353.75	353.25	*a*	*a*	354.05	355.05
21.....	355.45	355.45	356.35	358.65	354.45	353.95	353.75	353.55	*a*	*a*	354.15	354.95
22.....	354.85	355.95	356.35	358.55	354.55	353.95	353.75	353.55	*a*	*a*	354.25	354.95
23.....	355.15	355.95	356.55	358.15	354.50	353.95	353.75	353.55	*a*	*a*	354.35	355.05
24.....	354.95	355.65	356.55	358.45	354.65	353.95	353.75	353.55	*a*	*a*	354.35	354.95
25.....	354.75	355.65	356.55	358.15	354.35	353.90	353.65	353.55	*a*	*a*	354.35	354.85
26.....	354.45	355.15	356.35	357.95	354.25	354.10	353.65	353.45	*a*	*a*	354.25	354.75
27.....	354.55	355.25	356.85	357.75	354.15	354.10	353.65	353.45	*a*	*a*	354.25	354.75
28.....	354.95	355.95	357.55	357.45	353.95	353.95	353.65	353.65	*a*	*a*	354.25	354.65
29.....	355.25	......	357.95	357.35	354.05	353.95	353.65	353.60	*a*	*a*	354.30	354.65
30.....	355.45	......	358.15	357.05	353.95	353.95	353.35	353.85	*a*	*a*	354.35	354.65
31.....	355.75	......	358.25	......	353.95	......	353.50	353.65	......	*a*	......	354.55

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oswego River above Dam at Phoenix N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	361.94	362.39	362.59	363.59	362.99	361.89	361.64	360.74	361.10	*a*	*a*	363.10
2.....	362.14	362.49	362.39	363.39	362.99	361.89	361.64	360.64	*a*	*a*	*a*	363.00
3.....	362.29	362.29	362.39	363.44	362.99	361.89	361.59	360.54	*a*	361.20	*a*	362.80
4.....	362.39	362.09	362.39	363.44	362.99	362.09	361.59	360.54	*a*	*a*	*a*	362.70
5.....	362.39	362.49	362.59	363.54	362.94	362.39	361.59	360.44	360.80	361.20	*a*	362.80
6.....	362.59	*a*	362.29	363.89	362.79	362.39	361.44	360.54	*a*	*a*	*a*	362.60
7.....	362.54	362.39	362.29	364.09	362.94	362.29	361.34	360.39	360.80	*a*	*a*	362.50
8.....	362.69	362.39	362.19	364.29	362.79	362.29	361.24	360.49	360.80	*a*	362.90	362.40
9.....	362.59	362.29	362.19	364.39	362.69	362.19	361.29	360.44	*a*	361.70	363.00	362.50
10.....	362.59	362.29	362.19	364.34	362.59	362.14	361.09	360.44	*a*	*a*	363.40	*a*
11.....	362.29	362.09	362.34	364.29	362.49	362.14	361.14	360.44	361.20	361.60	363.40	362.50
12.....	362.29	362.19	362.79	364.29	362.39	362.14	361.04	360.49	*a*	*a*	*a*	362.70
13.....	362.39	361.99	362.69	364.24	362.29	362.09	360.99	360.69	*a*	*a*	363.20	363.10
14.....	362.39	361.89	362.69	364.19	362.49	361.94	360.99	360.39	*a*	*a*	*a*	363.50
15.....	362.69	361.99	362.79	364.19	362.34	361.99	360.94	360.79	361.20	*a*	363.30	363.80
16.....	362.39	361.99	362.99	364.19	362.24	361.99	361.04	360.69	361.10	361.50	363.20	363.30
17.....	362.29	361.99	362.79	364.09	362.19	361.89	361.09	360.69	*a*	361.50	363.40	*a*
18.....	362.29	361.94	362.69	364.04	362.14	361.99	361.19	360.69	361.40	*a*	364.00	363.70
19.....	362.24	362.39	362.94	363.99	362.09	361.94	361.24	360.74	361.40	*a*	*a*	363.70
20.....	362.19	362.29	362.79	363.89	362.09	361.89	361.19	360.94	361.30	*a*	364.00	363.60
21.....	362.19	362.24	362.59	363.79	362.24	361.84	361.19	360.84	361.30	*a*	363.70	363.50
22.....	362.39	362.29	362.69	363.74	362.04	361.89	361.14	360.49	361.30	*a*	363.50	363.50
23.....	362.09	362.39	362.69	363.69	361.99	361.94	361.24	360.39	*a*	361.40	363.30	363.60
24.....	362.09	362.24	362.69	363.49	361.84	361.79	361.09	360.94	*a*	361.20	363.30	363.70
25.....	362.09	362.24	362.79	363.39	361.89	361.99	360.79	360.89	*a*	362.00	363.00	363.80
26.....	361.99	362.54	362.99	363.29	361.89	361.84	360.79	360.99	361.20	362.00	*a*	363.90
27.....	362.09	362.39	362.99	363.24	361.84	361.84	360.89	361.29	361.20	361.70	363.20	*a*
28.....	362.19	362.59	363.19	363.14	361.99	361.79	360.89	361.39	*a*	361.80	363.20	363.70
29.....	362.64	......	363.44	363.09	361.79	361.74	360.74	361.44	361.30	*a*	363.20	363.10
30.....	362.39	......	363.49	363.19	361.89	361.69	360.89	361.39	361.20	361.10	363.20	*a*
31.....	362.39	......	363.59	......	361.89	......	360.79	361.24	......	*a*	......	*a*

a No record.

OSWEGO RIVER OPPOSITE BATTLE ISLAND, NEAR MINETTO, N. Y.

A gage was established September 14, 1900, on the Oswego river opposite Battle Island. This station was maintained by the United States Geological Survey in coöperation with this Department. The results may be found in the supplement of the report of the State Engineer and Surveyor of New York for 1902, pages 86–91; for 1903, pages 41–42, and for 1904, pages 512–513. The gage readings were discontinued in 1905. On May 25, 1907, a gage was erected by this Department on the right-hand bank of the Oswego river opposite Battle Island and directly across the stream from the former gage.

The discharge for the year 1907 has not been taken out. On April 26, 1908, a new gage was erected on the left-hand side of the stream, the same side as that on which the old U. S. Geological Survey gage was located, but at a point about 400 feet further upstream. This gage is a ⅞-in. by 6-in. board, sub-

divided to feet and tenths, reading from 5 to 15 feet. It is spiked to a 4-in. by 6-in. post set in the ground, the upper end of which is bolted to a slanting tree. The zero mark of the gage is at elevation 294.53. The zero mark of the old U. S. Geological Survey gage nearby was at elevation 298.16, Barge canal datum. The discharge is calculated from the rating determined in connection with the old U. S. Geological Survey gage, the gage readings being corrected by subtracting 3.67 to reduce them to equivalent readings of the U. S. Geological Survey gage.

During 1911 the gage opposite Battle Island has been read by L. D. Sterling, readings being taken each morning and night. The stream freezes over in part, but no winter discharge measurements are available and the flow for the winter months has been computed from the open water rating table. The winter records for former years, determined in the same manner, probably give somewhat excessive run-off for some months.

Mean Daily Discharge, Second-feet, of Oswego River opposite Battle Island, near Minetto, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	*7,008	10,225	8,992	13,580	10,225	4,000	3,465	3,465	3,595	*2,965	4,435	6,540
2	7,398	10,018	8,992	*12,808	9,812	3,930	*2,855	3,335	3,59[illegible]	4,220	4,360	6,448
3	7,790	10,018	8,890	13,580	9,403	3,930	2,965	3,335	*3,080	3,790	4,360	*4,820
4	8,590	9,812	8,890	13,242	8,590	*4,290	2,965	3,205	3,595	3,595	4,290	7,398
5	9,300	*9,608	*8,190	13,022	8,390	4,585	2,965	3,205	3,725	3,465	*4,070	5,908
6	9,608	9,812	8,090	13,022	8,190	4,585	3,020	*2,580	4,000	3,205	5,558	5,645
7	9,608	9,403	7,790	13,580	*7,790	4,435	2,745	3,335	4,435	4,000	5,385	5,558
8	*9,608	9,403	7,690	13,580	8,190	4,435	3,020	3,205	4,740	*3,465	4,585	5,470
9	9,608	9,198	7,790	*14,364	7,790	4,290	*2,745	3,205	4,900	4,585	4,900	5,470
10	9,403	9,198	7,593	16,180	7,690	4,435	3,020	3,205	*4,585	4,000	5,130	*4,220
11	9,403	9,300	7,690	15,960	7,203	*4,435	3,335	3,335	5,130	4,220	5,055	5,995
12	9,608	*9,300	*8,190	15,850	7,008	4,740	3,465	3,205	4,900	4,145	*4,000	5,558
13	9,608	9,300	9,608	15,850	7,008	4,585	3,595	*3,930	4,900	4,000	6,170	6,170
14	9,710	8,992	9,812	15,496	*6,818	4,435	3,595	2,855	4,740	4,070	5,215	6,633
15	*9,198	8,590	10,540	15,496	7,008	4,290	3,595	2,745	4,585	*2,855	5,470	7,398
16	9,198	8,390	10,642	*14,812	6,083	4,000	*3,335	2,690	4,435	4,585	5,558	8,290
17	9,300	8,190	10,848	14,588	5,908	4,000	3,725	2,525	*4,000	4,145	5,130	*7,790
18	9,300	8,390	10,848	15,036	5,908	*3,595	4,000	2,425	4,980	4,290	5,820	9,403
19	9,608	*8,190	*10,848	14,364	5,908	3,725	4,000	2,330	4,740	4,360	*a	8,690
20	9,608	8,992	9,812	14,140	6,083	3,595	4,145	*2,135	4,740	4,000	7,300	8,490
21	9,812	8,590	9,608	14,140	*5,733	3,530	4,220	2,230	4,740	4,360	6,633	8,290
22	*9,403	8,190	9,812	14,028	5,470	3,465	4,220	2,135	4,585	*3,790	7,105	8,090
23	8,992	8,190	9,812	*12,808	5,215	3,335	*3,465	2,135	4,435	5,385	7,105	8,992
24	8,590	8,190	9,812	12,370	5,055	3,205	3,465	1,870	*3,860	4,820	7,008	*7,690
25	7,990	8,590	9,812	12,150	4,740	*3,205	3,860	1,870	4,740	4,510	6,725	8,992
26	7,990	*8,190	*9,403	11,498	4,740	3,335	3,860	1,870	4,435	4,000	*5,470	9,403
27	8,090	8,590	10,848	11,060	4,740	3,465	3,725	*2,135	4,000	4,290	6,725	9,505
28	8,490	8,890	11,498	10,642	*4,290	3,595	3,725	2,525	3,725	4,660	6,818	9,198
29	*9,198	......	12,150	10,435	4,290	3,595	3,660	3,205	3,595	*3,270	6,818	8,992
30	10,225	......	12,590	*10,435	4,145	3,465	*3,335	3,595	3,335	4,980	5,820	8,590
31	10,435	......	13,580	....	4,145	......	3,595	3,660	......	4,660	......	*6,633
Mean	9,086	8,991	9,699	13,604	6,567	3,950	3,474	2,822	4,295	4,087	5,621	7,299

* Sunday.

Monthly Discharge of Oswego River opposite Battle Island, near Minetto, N. Y.
[Drainage area, 4,900 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	10,435	7,008	9,086	1.850	2.130
February	10,225	8,190	8,991	1.830	1.910
March	13,580	7,593	9,699	1.980	2.280
April	16,180	10,435	13,604	2.780	3.100
May	10,225	4,145	6,567	1.340	1.540
June	4,740	3,205	3,950	0.806	0.899
July	4,220	2,745	3,474	0.709	0.817
August	3,930	1,870	2,822	0.576	0.664
September	5,130	3,080	4,295	0.877	0.978
October	5,385	2,855	4,087	0.834	0.962
November	7,300	4,000	5,621	1.150	1.280
December	9,505	4,220	7,299	1.490	1.720

ONEIDA RIVER DRAINAGE BASIN.

Oneida lake has a water-surface area of 80 square miles and lies at an elevation of 370 feet above tide. The drainage basin within a radius of ten miles to the south and west is relatively flat, with numerous swampy tracts. The lake receives, through Chittenango and Oneida creeks, drainage from an extensive area of the central New York plateau and, through Wood and Fish creeks on the east, drainage from a portion of the west slope of the plateau bordering the Adirondack mountains. On the north the drainage area is less extensive and the inflowing streams are small.[a]

The outflow from the lake through Oneida river joins Seneca river at Three River Point, forming Oswego river. From Brewerton to Three River Point the distance, in a straight line, is but eight miles; following the windings of the stream it is sixteen miles.

Oneida river will be canalized in connection with the Barge canal work. Two large and two smaller bends will be cut off, the largest cut-off being opposite Caughdenoy. The system of eel weirs formerly located in the river at Caughdenoy has been replaced by a substantial masonry dam. A lock has also been

[a] A portion of the drainage area is shown on the Syracuse, Chittenango, Oneida, Oriskany Morrisville, Cazenovia and Tully topographic atlas sheets of the United States Geological Survey

placed in the cut-off channel, the object of the dam and lock being to maintain the water at a navigable depth in the canal and river above the lock to the foot of Oneida lake at Brewerton. The dam at Oak Orchard has been removed, and the low navigable stage of the stream from Three River Point up to Lock 26, located in the cut-off at Caughdenoy, will be 363.0, or the same as the pool level in Oswego river from Phoenix to Three River Point.

WATER-SURFACE ELEVATION RECORDS FOR ONEIDA RIVER AND TRIBUTARIES.

The following series of tables shows the mean daily elevation of water-surface at various gaging stations during 1911 as determined from various gages located on Oneida river, Oneida lake and tributaries.

The elevation of water-surface is in all cases referred to Barge canal datum, which is mean tide level at New York city, taken as being 14.73 ft. below a certain bench-mark known as grist mill bench-mark, at Greenbush (Rensselaer), N. Y.

The tables are arranged in order going upstream from Three River Point and show by comparison the fall in the stream between the different gages. Tables of elevation of water-surface at some additional points in the drainage basin where records of discharge are maintained will be found in connection with the descriptions of the several discharge stations.

Occasionally apparent inconsistencies in the tables of water-surface elevation occur where the water level at an upstream gage is recorded slightly lower than at a point farther downstream, but are, as a rule, not the result of actual mistakes, but arise from the fact that most of the gages are read to the nearest tenth foot only, and also owing to the fact that the streams and lakes are sometimes affected by wind to such an extent as to cause the water-surface to be slightly higher at the downstream end of the level reach than at the upstream end.

The accompanying table gives details as to the types of gages used, the datum of each and the manner in which they are read.

Water-surface Elevation Gages Maintained on the Oneida River and Tributaries During the Year 1911.

LOCATION.	Date established.	Observer.	Elevation of zero mark (B. C. datum).	Type of gage.	Subdivision of gage.	Readings taken to
Oneida river.						
Three River Point	April 16, 1904	John Chamberlain	361.00	Staff	$\frac{1}{10}$ Foot	$\frac{1}{10}$ Foot
Oak Orchard, below dam	April 23, 1904	Louis McArthur	360.90	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Oak Orchard, above dam	Aug. 30, 1902	" "	360.80	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Caughdenoy, below lock	April 22, 1904	John R. Hiller	362.93	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Caughdenoy, above lock	" " "	" "	369.05	"	$\frac{1}{10}$ "	$\frac{1}{100}$ "
Brewerton	" " "	W. M. Hubbard	367.06	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Oneida lake — Sylvan Beach	July 1, 1904	Wm. H. Dunn	368.00	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Oneida creek.						
Kenwood, below dam	1907	H. F. Mason	*	"	$\frac{1}{10}$ "	$\frac{1}{100}$ "
Kenwood, above dam	....	" "	*	"	$\frac{1}{10}$ "	$\frac{1}{100}$ "
Butternut creek — Jamesville	July 25, 1907	Maria B. Brown	*	Chain	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Limestone feeder — Fayetteville	Aug. 27, 1905	Henry Straub	423.82	Staff	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Limestone creek.						
Fayetteville, above dam	" " "	" "	429.53	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Manlius	July 23, 1907	Clyde Judge	*	Chain	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Chittenango creek — Chittenango	May 22, 1901	Floyd Bettinger	450.87	Staff	$\frac{1}{10}$ "	$\frac{1}{10}$ "

* Arbitrary datum.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oneida River at Three River Point, N. Y., a.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	......	......	......	......	......	......	......	......	......	361.58	362.48	363.48
2	......	......	......	......	......	......	......	......	......	361.83	362.65	363.57
3	......	......	......	......	......	......	......	......	......	361.58	362.65	363.48
4	......	......	......	......	......	......	......	......	......	361.66	362.73	363.40
5	......	......	......	......	......	......	......	......	......	361.58	362.98	363.15
6	......	......	......	......	......	......	......	......	......	361.58	363.15	363.07
7	......	......	......	......	......	......	......	......	......	361.91	363.23	362.98
8	......	......	......	......	......	......	......	......	......	362.00	362.98	363.15
9	......	......	......	......	......	......	......	......	......	362.08	362.98	363.07
10	......	......	......	......	......	......	......	......	......	362.00	363.23	362.90
11	......	......	......	......	......	......	......	......	......	361.91	363.31	363.15
12	......	......	......	......	......	......	......	......	......	361.83	363.40	363.15
13	......	......	......	......	......	......	......	......	......	361.91	363.40	363.57
14	......	......	......	......	......	......	......	......	......	362.08	363.40	363.73
15	......	......	......	......	......	......	......	......	......	362.08	363.56	363.82
16	......	......	......	......	......	......	......	......	......	362.24	363.56	364.15
17	......	......	......	......	......	......	......	......	......	362.24	363.65	364.40
18	......	......	......	......	......	......	......	......	......	362.24	363.65	364.48
19	......	......	......	......	......	......	......	......	......	362.24	363.90	364.48
20	......	......	......	......	......	......	......	......	......	362.24	363.98	364.40
21	......	......	......	......	......	......	......	......	......	362.33	364.15	364.32
22	......	......	......	......	......	......	......	......	......	362.00	363.90	364.15
23	......	......	......	......	......	......	......	......	......	361.91	363.82	364.32
24	......	......	......	......	......	......	......	......	......	361.83	363.90	364.48
25	......	......	......	......	......	......	......	......	......	361.91	363.73	364.65
26	......	......	......	......	......	......	......	......	......	362.08	363.90	364.73
27	......	......	......	......	......	......	......	......	......	362.08	363.90	364.73
28	......	......	......	......	......	......	......	......	......	362.00	363.82	364.65
29	......	......	......	......	......	......	......	......	......	362.65	363.82	364.48
30	......	......	......	......	......	......	......	......	......	362.90	363.73	364.23
31	......	......	......	......	......	......	......	......	......	362.90	......	363.90

a Record for January to September, inclusive, imperfect.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oneida River below Dam at Oak Orchard, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	362.50	363.60	363.20	365.70	365.50	362.80	362.40	361.25	361.55	361.70	362.80	363.90
2	362.50	363.60	363.20	365.70	365.40	362.80	362.35	361.20	361.40	361.70	362.85	363.90
3	362.50	363.60	363.20	365.70	365.40	362.80	362.30	361.10	361.45	361.70	362.95	363.80
4	362.55	363.60	363.10	365.70	365.15	362.85	362.25	361.10	361.50	361.70	363.00	363.80
5	362.75	363.45	363.05	365.85	365.00	363.10	362.10	361.00	361.55	361.65	363.10	363.80
6	362.80	363.40	363.00	366.25	365.00	363.10	362.00	360.90	361.65	361.70	363.15	363.80
7	362.80	363.50	363.00	367.15	364.85	363.00	361.90	360.90	361.85	362.40	363.20	363.75
8	363.80	363.85	363.00	367.00	364.70	363.00	361.80	360.90	362.00	362.55	363.20	363.70
9	364.70	363.90	363.00	367.20	364.65	363.00	361.80	360.85	362.00	362.50	363.20	363.70
10	364.60	363.85	363.05	367.20	364.35	363.05	361.80	360.70	361.90	362.50	363.25	363.70
11	364.35	363.60	363.40	367.20	364.20	363.10	361.80	360.70	361.95	362.45	363.45	363.75
12	364.15	363.35	363.65	367.25	364.05	363.10	361.70	360.60	361.95	362.40	363.75	363.90
13	364.00	363.25	363.80	367.30	364.00	363.10	361.65	360.60	362.05	362.40	363.80	364.25
14	363.90	363.20	363.95	367.40	363.90	363.10	361.60	360.50	362.20	362.40	363.85	364.75
15	363.90	363.20	364.10	367.30	363.90	363.05	361.60	360.55	362.20	362.35	363.95	365.00
16	363.85	363.10	364.05	367.25	363.75	362.90	361.65	361.10	362.10	362.30	364.20	365.20
17	363.75	362.90	364.00	367.20	363.55	362.80	361.70	361.10	362.10	362.30	364.35	365.30
18	363.60	362.90	364.00	367.20	363.35	362.80	361.80	361.00	362.10	362.35	364.40	365.20
19	363.60	362.90	363.90	367.10	363.30	362.80	361.80	361.00	362.10	362.40	364.40	365.50
20	363.45	362.90	363.90	366.85	363.30	362.75	361.80	361.15	362.05	362.40	364.40	365.30
21	363.35	362.90	363.90	366.65	363.30	362.70	361.80	361.20	362.00	362.40	364.40	365.50
22	363.30	362.90	363.95	366.60	363.30	362.70	361.80	361.05	362.00	362.40	364.35	365.35
23	363.30	362.90	364.00	366.55	363.25	362.65	361.80	361.05	361.95	362.45	364.30	365.50
24	363.30	362.90	364.00	366.35	363.10	362.60	361.80	361.15	361.90	362.50	364.30	365.50
25	363.30	362.95	364.00	366.20	363.05	362.60	361.80	361.25	361.90	362.50	364.20	365.50
26	363.35	363.25	364.05	366.10	363.00	362.60	361.75	361.40	361.85	362.65	364.20	365.30
27	363.45	363.40	364.15	365.85	362.95	362.55	361.55	361.55	361.80	362.70	364.15	365.50
28	363.60	363.35	364.30	365.70	362.90	362.50	361.35	361.65	361.75	362.60	364.10	365.50
29	363.60	......	364.65	365.65	362.90	362.45	361.30	361.80	361.70	362.50	363.95	365.30
30	363.60	......	365.50	365.60	362.90	362.40	361.30	361.80	361.70	362.55	364.20	365.70
31	363.60	......	365.65	......	362.80	......	361.30	361.65	......	362.75	......	366.20

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oneida River above Dam at Oak Orchard, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	365.10	365.60	365.10	366.80	366.85	365.00	365.30	364.45	364.75	365.10	365.80	366.45
2.....	365.10	365.55	365.20	366.80	366.85	365.00	365.30	364.40	364.70	365.05	365.90	366.40
3.....	365.15	365.50	365.20	366.80	366.75	365.00	365.30	364.40	364.70	365.00	365.90	366.40
4.....	366.05	365.50	365.20	366.80	366.70	365.00	365.25	364.35	364.75	365.00	365.80	366.35
5.....	364.95	365.50	365.20	366.90	366.70	365.00	365.20	364.30	364.95	364.95	365.80	366.40
6.....	364.80	365.50	365.15	367.00	366.70	365.00	365.15	364.30	365.25	365.00	365.80	366.40
7.....	364.80	365.60	365.10	367.55	366.70	364.95	365.10	364.30	365.45	365.55	365.80	366.45
8.....	364.90	366.00	365.15	367.80	366.55	364.85	365.00	364.25	365.50	365.65	365.85	366.40
9.....	365.55	366.20	365.20	368.00	366.45	364.80	365.00	364.20	365.40	365.60	365.90	366.35
10.....	365.30	365.75	365.20	368.00	366.25	364.85	365.00	364.15	365.35	365.50	365.90	366.35
11.....	365.05	365.45	365.30	368.00	366.20	365.05	364.95	364.10	365.35	365.50	365.90	366.45
12.....	364.90	365.30	365.30	368.05	366.20	365.10	364.90	364.05	365.45	365.50	366.10	366.60
13.....	365.00	365.30	365.35	368.20	366.10	365.10	364.90	364.00	365.40	365.55	366.10	366.65
14.....	365.35	365.30	365.40	368.20	366.00	365.10	364.85	364.00	365.40	365.50	366.10	366.85
15.....	365.60	365.30	365.55	368.30	365.95	365.10	364.80	363.95	365.30	365.50	366.15	367.00
16.....	365.60	365.30	365.60	368.30	365.80	365.00	364.85	363.90	365.30	365.60	366.25	367.10
17.....	365.45	365.30	365.60	368.30	365.75	365.00	365.00	363.80	365.35	365.60	366.40	367.10
18.....	365.40	365.30	365.60	368.15	365.70	364.90	365.00	363.80	365.40	365.65	366.40	367.10
19.....	365.40	365.25	365.65	367.95	365.55	364.90	364.95	363.80	365.30	365.60	366.40	367.00
20.....	365.40	365.20	365.70	367.80	365.50	364.90	364.90	363.80	365.25	365.60	366.45	367.10
21.....	365.40	365.10	365.70	367.70	365.45	364.90	364.90	364.10	365.20	365.60	366.50	367.20
22.....	365.40	365.10	365.75	367.70	365.35	365.25	364.75	363.95	365.20	365.60	366.50	367.00
23.....	365.40	365.10	365.80	367.65	365.30	365.60	364.75	363.80	365.20	365.65	366.50	367.20
24.....	365.35	365.10	365.80	367.60	365.30	365.50	364.80	363.85	365.20	365.70	366.50	367.40
25.....	365.30	365.10	365.80	367.45	365.30	365.50	364.85	364.00	365.20	365.70	366.50	367.40
26.....	365.35	365.10	365.80	367.25	365.20	365.50	364.75	364.10	365.25	365.70	366.50	367.30
27.....	365.40	365.15	366.00	367.20	365.20	365.50	364.70	364.20	365.30	365.60	366.55	367.30
28.....	365.50	365.10	366.55	367.15	365.20	365.45	364.55	364.35	365.30	365.60	366.60	367.40
29.....	365.50	......	366.75	367.00	365.15	365.40	364.50	364.65	355.20	365.70	366.55	367.40
30.....	365.55	......	366.80	366.90	365.10	365.35	364.50	364.90	365.20	365.70	366.50	367.60
31.....	365.60	......	366.80	......	365.05	......	364.50	364.80	......	365.75	......	367.70

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oneida River below Lock at Caughdenoy, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	365.40	365.80	365.20	367.70	368.20	365.30	365.33	364.83	364.83	365.23	365.73	366.83
2.....	365.60	365.70	365.30	367.80	368.10	365.30	365.33	364.83	364.63	365.13	365.63	366.83
3.....	365.50	365.80	365.20	367.80	368.00	......	365.33	364.73	364.63	365.13	365.73	366.83
4.....	365.40	365.80	365.30	367.90	367.80	......	365.33	364.63	364.73	365.03	365.73	366.83
5.....	366.00	365.70	365.30	368.00	367.80	......	365.33	364.63	364.83	365.13	365.63	366.93
6.....	367.00	365.70	365.30	368.10	367.70	......	365.23	364.73	364.83	365.33	365.73	366.93
7.....	367.10	365.60	365.30	368.50	367.70	365.63	365.23	364.73	364.93	365.43	365.83	366.83
8.....	367.20	365.70	365.30	368.80	367.60	365.23	365.23	364.73	365.23	365.43	365.73	366.83
9.....	367.40	365.60	365.30	369.40	367.40	365.23	365.13	364.63	365.33	365.53	366.03	366.83
10.....	367.40	365.50	365.40	369.60	367.20	365.23	365.13	364.53	365.23	365.53	365.93	366.93
11.....	365.90	365.50	365.50	369.60	367.00	365.33	365.13	364.43	365.13	365.53	365.93	366.93
12.....	365.90	365.50	365.50	369.50	366.90	365.33	365.03	364.33	365.13	365.43	366.03	367.03
13.....	366.00	365.50	365.70	369.40	366.80	365.23	364.93	364.23	365.23	365.53	365.93	367.23
14.....	366.00	365.50	365.80	369.50	366.50	365.13	364.93	364.13	365.33	365.53	366.43	367.13
15.....	366.00	365.50	365.80	369.50	366.40	364.93	364.93	363.93	365.43	365.43	366.23	367.13
16.....	366.00	365.40	366.30	369.50	366.30	365.03	364.83	363.83	365.43	365.63	366.23	367.53
17.....	366.00	365.40	366.70	369.50	366.30	365.13	364.83	363.73	365.43	365.53	366.33	367.73
18.....	366.00	365.30	366.40	369.60	366.10	365.13	364.83	363.63	365.33	365.53	366.43	367.63
19.....	365.90	365.20	366.10	369.50	366.20	365.03	365.03	363.73	365.23	365.63	366.33	367.83
20.....	365.90	365.20	365.80	369.40	366.10	365.03	365.03	363.73	365.33	365.63	366.53	367.83
21.....	365.70	365.30	365.80	369.40	366.00	365.23	365.03	363.73	365.23	365.73	366.73	367.73
22.....	365.60	365.20	365.80	369.30	365.90	365.33	365.03	363.63	365.23	365.73	366.73	367.43
23.....	365.60	365.20	365.80	369.10	365.80	365.43	365.13	363.63	365.23	365.63	366.83	367.73
24.....	365.70	365.20	365.90	369.00	365.60	365.33	365.13	363.63	365.23	365.53	366.83	367.83
25.....	365.60	365.20	366.00	369.00	365.60	365.33	365.13	363.53	365.33	365.73	366.83	367.93
26.....	365.50	365.20	366.10	368.90	365.50	365.33	365.23	363.63	365.33	365.73	366.83	367.93
27.....	365.60	365.20	366.60	368.70	365.50	365.43	365.23	363.53	365.33	365.73	366.93	368.63
28.....	365.80	365.20	367.00	368.40	365.40	365.13	365.13	364.13	365.23	365.73	366.93	368.83
29.....	365.80	......	367.50	368.30	365.40	365.13	365.13	364.13	365.13	365.73	366.83	368.93
30.....	365.80	......	367.60	368.20	365.40	365.13	364.93	364.83	365.13	365.73	366.93	368.93
31.....	365.60	......	367.60	......	365.60	......	364.93	365.13	......	365.73	......	369.23

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oneida River above Lock at Caughdenoy, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	370.53	370.77	370.45	371.51	371.69	370.35	370.30	370.00	370.03	369.90	370.30	370.90
2	370.55	370.75	370.47	371.50	371.68	370.30	370.30	370.00	370.00	369.85	370.05	370.88
3	370.65	370.73	370.50	371.53	371.65	370.33	370.30	370.03	369.95	370.00	370.25	370.90
4	370.73	370.77	370.50	371.65	371.65	370.35	370.25	370.10	369.95	369.90	370.35	370.90
5	370.73	370.73	370.47	371.67	371.63	370.95	370.15	370.03	370.00	370.00	370.35	370.85
6	370.80	370.71	370.50	371.83	371.53	370.91	370.00	370.03	369.85	370.10	370.40	370.85
7	370.78	370.75	370.45	371.89	371.49	370.83	370.15	370.05	369.95	370.13	370.35	370.81
8	370.73	370.70	370.47	371.93	371.40	370.81	370.20	370.00	370.10	370.10	370.25	370.83
9	370.70	370.65	370.53	372.03	371.34	370.77	370.15	369.85	370.10	370.13	370.60	370.79
10	370.80	370.63	370.55	372.10	371.33	370.45	370.15	369.80	370.05	370.20	370.45	370.90
11	370.78	370.60	370.57	372.13	371.20	370.43	370.10	369.90	370.03	370.15	370.50	370.93
12	370.73	370.55	370.60	372.15	371.17	370.41	370.00	369.85	370.05	370.05	370.45	370.95
13	370.75	370.57	370.63	372.15	371.13	370.35	370.05	369.85	370.10	370.10	370.35	371.00
14	370.80	370.60	370.67	372.13	371.10	370.33	370.10	369.85	370.15	370.15	370.65	371.00
15	370.78	370.55	370.75	372.10	371.05	370.35	370.10	369.83	370.15	370.20	370.55	371.20
16	370.80	370.53	370.80	372.10	371.00	370.43	370.05	369.80	370.10	370.25	370.50	371.20
17	370.80	370.50	370.77	372.07	370.99	370.45	370.03	369.75	370.15	370.20	370.55	371.25
18	370.80	370.45	370.75	372.07	370.90	370.45	370.10	369.77	370.10	370.20	370.67	371.30
19	370.80	370.45	370.73	372.06	370.89	370.40	370.20	369.75	370.05	370.15	370.55	371.30
20	370.78	370.50	370.75	372.09	370.90	370.39	370.05	369.80	370.20	370.25	370.70	371.30
21	370.65	370.47	370.77	372.05	370.81	370.25	370.05	369.80	370.05	370.35	370.80	371.30
22	370.65	370.47	370.81	372.03	370.65	370.29	370.10	369.73	370.05	370.33	370.85	371.27
23	370.67	370.50	370.81	372.02	370.59	370.35	370.10	369.75	370.05	370.35	370.90	371.35
24	370.70	370.50	370.83	371.97	370.50	370.29	370.15	369.75	370.05	370.35	370.90	371.31
25	370.70	370.53	370.83	371.85	370.47	370.33	370.15	369.77	370.05	370.37	370.87	371.37
26	370.65	370.55	370.81	371.81	370.43	370.30	370.10	369.77	370.05	370.35	370.92	371.39
27	370.63	370.55	370.81	371.79	370.42	370.30	370.05	369.80	370.03	370.35	370.90	371.10
28	370.63	370.57	370.95	371.75	370.40	370.31	370.10	369.90	369.95	370.33	370.92	371.05
29	370.67	......	371.15	371.73	370.41	370.29	370.10	369.90	369.90	370.33	370.79	371.10
30	370.45	......	371.45	371.69	370.45	370.31	370.03	369.89	369.85	370.30	370.91	371.17
31	370.77	......	371.43	......	370.33	......	370.00	370.05	......	370.30	......	371.26

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oneida River at Brewerton, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	370.66	371.16	370.86	372.36	372.76	370.76	370.56	370.16	369.96	370.06	370.56	372.06
2	370.66	371.26	370.86	372.46	372.76	370.76	370.46	370.16	369.96	370.06	370.56	372.06
3	370.66	371.26	370.86	372.56	372.66	370.76	370.46	370.16	369.96	369.96	370.56	372.06
4	370.66	371.26	370.86	372.66	372.56	370.66	370.46	360.16	369.96	370.06	370.56	372.06
5	370.66	371.26	370.86	372.76	372.46	370.66	370.46	370.16	369.96	369.96	370.56	372.06
6	370.66	371.26	370.86	372.96	372.36	370.56	370.46	370.06	369.96	370.06	370.56	372.06
7	370.66	371.26	370.86	373.06	372.36	370.56	370.36	370.06	369.96	370.06	370.66	372.16
8	370.66	371.16	370.86	373.16	372.26	370.66	370.36	370.06	369.96	370.06	370.66	372.16
9	370.66	371.16	370.76	373.26	372.26	370.56	370.36	369.96	369.96	370.06	370.76	372.16
10	370.66	371.16	370.76	373.46	372.16	370.56	370.36	370.06	369.96	370.06	370.76	372.16
11	370.66	371.16	370.76	373.76	372.16	370.56	370.36	369.96	369.96	370.06	370.76	372.16
12	370.66	371.16	370.76	373.86	372.06	370.56	370.36	369.96	369.96	369.96	370.86	372.16
13	370.66	371.16	370.76	373.86	371.96	370.56	370.36	370.06	369.96	370.06	370.86	372.16
14	370.66	371.16	370.86	373.96	371.86	370.56	370.36	369.96	369.96	370.06	370.96	372.16
15	370.66	371.16	370.96	373.96	371.86	370.56	370.36	369.96	369.96	370.06	371.06	372.16
16	370.66	371.06	370.96	373.96	371.76	370.56	370.36	370.06	370.06	370.06	371.06	372.16
17	370.66	371.06	370.96	373.96	371.66	370.56	370.26	369.96	369.96	370.06	371.16	372.16
18	370.66	371.06	370.96	373.96	371.66	370.56	370.26	369.96	369.96	370.06	371.26	372.26
19	370.66	370.96	370.96	373.86	371.56	370.56	370.26	369.96	369.96	370.16	371.26	372.26
20	370.66	370.96	371.06	373.76	371.56	370.56	369.26	369.96	369.96	370.16	371.36	372.26
21	370.66	370.96	371.06	373.66	371.46	370.56	370.26	369.96	369.96	370.16	371.46	372.26
22	370.66	370.96	371.06	373.66	371.36	370.56	370.26	369.96	369.96	370.16	371.56	372.26
23	370.66	370.96	371.06	373.46	371.36	370.56	370.26	369.96	369.96	370.16	371.56	372.26
24	370.66	370.86	371.16	373.46	371.36	370.56	370.16	369.96	369.96	370.16	371.56	372 26
25	370.66	370.86	371.26	373.36	371.26	370.56	370.16	369.96	370.06	370.26	371.66	372.16
26	370.66	370.86	371.36	373.26	371.16	370.56	370.16	369.96	369.96	370.26	371.76	372.16
27	370.76	370.86	371.66	373.06	371.06	370.56	370.16	369.96	369.96	370.36	371.76	372.06
28	370.76	370.86	372.06	372.96	370.96	370.56	370.16	369.96	369.96	370.36	371.86	372.06
29	370.86	......	372.16	372.86	370.86	370.56	370.16	369.96	369.96	370.46	371.96	372.06
30	371.06	......	372.16	372.86	370.86	370.56	370.16	369.96	369.96	370.46	371.96	372.06
31	371.06	......	372.36	......	370.86	......	370.16	369.96	......	370.46	......	371.96

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Oneida Lake at Sylvan Beach, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	370.90	371.20	370.90	372.90	373.30	379.90	370.60	370.20	369.80	370.50	370.60	371.40
2	370.90	371.20	370.90	372.90	373.30	371.00	370.40	370.20	369.80	370.50	370.60	371.40
3	370.90	371.20	370.90	372.90	373.30	371.00	370.40	370.10	369.80	370.60	370.60	371.50
4	371.00	371.20	370.90	373.00	373.00	371.00	370.30	370.10	369.90	370.70	370.60	371.60
5	371.00	371.20	370.80	372.70	372.90	371.00	370.30	370.10	369.90	370.90	370.60	371.60
6	371.00	371.20	370.80	373.00	372.80	371.00	370.20	370.10	369.90	370.50	370.60	371.60
7	371.00	371.20	370.80	373.30	372.70	371.00	370.20	370.10	370.10	370.40	370.70	371.60
8	371.00	371.20	370.80	373.50	372.70	371.00	370.10	370.00	370.20	370.40	370.90	371.70
9	371.00	371.20	370.80	374.00	372.60	371.10	370.00	370.00	370.10	370.40	370.90	371.80
10	371.20	371.20	370.80	374.00	372.40	371.10	370.00	370.00	370.20	370.40	370.90	371.90
11	371.30	371.20	370.80	374.10	372.20	371.10	370.00	370.00	370.30	370.40	371.00	372.00
12	371.30	371.20	370.90	374.00	372.00	371.10	370.00	370.00	370.30	370.30	371.60	372.00
13	371.30	371.10	370.90	374.00	371.90	371.00	370.00	370.00	370.50	370.30	371.60	372.00
14	371.20	371.10	370.90	374.10	371.80	371.00	369.90	370.00	370.50	370.30	371.50	372.00
15	371.20	370.90	371.00	374.30	371.70	371.00	369.90	370.00	370.50	370.30	371.30	372.10
16	371.30	370.90	371.00	374.30	371.60	371.00	370.20	370.00	370.50	370.30	371.30	372.10
17	371.30	370.90	371.00	374.20	371.50	371.00	370.20	370.00	370.50	370.30	371.40	372.20
18	371.30	370.90	371.00	374.00	371.50	370.90	370.30	370.00	370.40	370.40	371.40	372.20
19	371.30	370.90	371.20	373.90	371.40	370.90	370.40	370.00	370.40	370.50	371.40	372.40
20	371.30	370.90	371.20	373.90	371.40	370.80	370.40	370.00	370.30	370.60	371.40	372.40
21	371.30	370.90	371.30	373.80	371.40	370.70	370.30	370.00	370.30	370.60	371.40	372.40
22	371.20	370.90	371.40	373.80	371.40	370.60	370.30	370.00	370.30	370.70	371.40	372.40
23	371.10	370.90	371.50	373.70	371.40	370.60	370.30	370.00	370.30	370.70	371.30	372.40
24	371.10	370.90	371.60	373.70	371.30	370.60	370.30	369.80	370.30	370.70	371.30	372.40
25	371.10	370.90	371.60	373.50	371.40	370.50	370.30	369.80	370.30	370.70	371.30	372.40
26	371.10	370.90	371.60	373.40	371.50	370.50	370.30	369.70	370.40	370.70	371.50	372.50
27	371.20	370.90	371.70	373.30	371.10	370.60	370.20	369.80	370.40	370.60	371.50	372.50
28	371.20	370.90	372.60	373.20	371.10	370.60	370.20	369.90	370.50	370.60	371.50	372.50
29	371.20	......	372.60	373.20	371.10	370.60	370.20	369.90	370.50	370.60	371.50	372.60
30	371.20	......	372.80	373.20	371.00	370.60	370.20	369.80	370.50	370.60	371.40	372.60
31	371.20	......	372.90	......	371.00	......	370.20	369.80	......	370.60	......	372.50

ONEIDA RIVER AT CAUGHDENOY, N. Y.

A masonry dam was completed across the Oneida river at Caughdenoy during the summer of 1909. This dam has a substantially level crest 415 feet in length. The crest is at elevation 369.4 and has an ogee cross-section with a slope, or batter, on the upstream portion of the crest of 1 foot rise in 2 feet horizontal width. The downstream portion of the crest is rounded with a radius of 3.24 feet.

The gage is located about 150 feet upstream from the dam, on the right-hand side of the stream. The channel at this point is about 350 feet in width, average bottom elevation being 365.0. The discharge from the dam has been calculated from United States Geological Survey experiments on an ogee cross-section similar in form, and an allowance has been made for velocity of approach. During the summer season and also to some extent during the winter season water is diverted past the left-hand end of the dam through the Caughdenoy lock. An estimate of the amount of diversion has been made and included in the calculated discharge of the river.

Mean Daily Discharge, Second-feet, of Oneida River at Caughdenoy, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	*1,776	2,384	1,566	4,815	5,468	1,324	1,219	659	711	*480	1,219	2,737
2......	1,824	2,330	1,621	*4,779	5,432	1,219	*1,219	659	659	412	746	2,682
3......	2,072	2,278	1,703	4,887	5,322	1,282	1,219	711	*570	659	1,119	*2,737
4......	2,278	2,384	1,703	5,322	5,322	*1,324	1,119	832	570	480	1,324	2,737
5......	2,278	*2,278	*1,621	5,395	5,248	2,922	926	711	659	659	*1,324	2,600
6......	2,463	2,224	1,703	6,004	4,887	2,774	659	*711	412	832	1,430	2,600
7......	2,410	2,330	1,566	6,237	*4,740	2,545	926	746	570	888	1,324	2,490
8......	*2,278	2,198	1,621	6,408	4,389	2,490	1,019	659	832	*832	1,119	2,545
9......	2,198	2,072	1,776	*6,839	4,188	2,384	*926	412	832	888	1,945	2,436
10......	2,463	2,021	1,824	7,126	4,154	1,566	926	344	*746	1,019	1,566	*2,737
11......	2,410	1,945	1,872	7,253	3,728	*1,512	832	480	711	926	1,703	2,878
12......	2,278	*1,824	*1,945	7,337	3,633	1,457	659	412	746	746	*1,566	2,922
13......	2,330	1,872	2,021	7,337	3,506	1,324	746	*412	832	832	1,324	3,106
14......	2,463	1,945	2,122	7,253	*3,411	1,282	832	412	926	926	2,072	3,106
15......	*2,410	1,824	2,330	7,126	3,258	1,324	832	385	926	*1,019	1,824	3,728
16......	2,463	1,776	2,463	*7,126	3,106	1,512	*746	344	832	1,119	1,703	3,728
17......	2,463	1,703	2,384	7,003	3,069	1,566	711	283	*926	1,019	1,824	*3,891
18......	2,463	1,566	2,330	7,003	2,737	*1,566	832	307	832	1,019	2,122	4,054
19......	2,463	*1,566	*2,278	6,962	2,710	1,430	1,019	283	746	926	*1,824	4,054
20......	2,410	1,703	2,330	7,085	2,737	1,409	746	*344	1,019	1,119	2,198	4,054
21......	2,072	1,621	2,384	6,921	*2,490	1,119	746	344	746	1,324	2,463	4,054
22......	*2,072	1,621	2,490	6,839	2,072	1,199	832	259	746	*1,282	2,600	3,956
23......	2,122	1,703	2,490	*6,798	1,921	1,324	*832	283	746	1,324	2,737	4,222
24......	2,198	1,703	2,545	6,584	1,703	1,199	926	283	*746	1,324	2,737	*4,088
25......	2,198	1,776	2,545	6,082	1,621	*1,282	926	307	746	1,367	2,655	4,288
26......	2,072	*1,824	*2,490	5,927	1,512	1,219	832	307	746	1,324	*2,811	4,356
27......	2,021	1,824	2,490	5,850	1,485	1,219	746	*344	711	1,324	2,737	3,411
28......	2,021	1,872	2,922	5,693	*1,430	1,240	832	480	570	1,282	2,811	3,258
29......	*2,122	......	3,570	5,620	1,457	1,199	832	480	480	*1,282	2,436	3,411
30......	1,566	......	4,584	*5,468	1,566	1,240	*711	466	412	1,219	2,774	3,633
31......	2,384	......	4,506	......	1,282	......	659	746	......	1,219	......	*3,924
Mean...	2,227	1,935	2,316	6,369	3,212	1,548	871	465	723	1,002	1,935	3,368

* Sunday.

Monthly Discharge of Oneida River at Caughdenoy, N. Y.

[Drainage area, 1,377 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	2,463	1,566	2,227	1.62	1.87
February	2,384	1,566	1,935	1.41	1.47
March	4,584	1,566	2,316	1.68	1.94
April	7,337	4,779	6,369	4.63	5.17
May	5,468	746	3,212	2.33	2.69
June	2,922	1,119	1,548	1.12	1.25
July	1,219	659	871	0.633	0.73
August	832	259	465	0.338	0.39
September	1,019	412	723	0.525	0.586
October	1,367	412	1,002	0.728	0.839
November	2,811	746	1,935	1.41	1.57
December	4,356	2,436	3,368	2.45	2.82

CHITTENANGO CREEK DRAINAGE BASIN.

DESCRIPTION.

Chittenango creek is the principal tributary of Oneida lake from the south. It comprises three main branches: Butternut creek, Limestone creek and Chittenango creek proper. The three branches join near North Manlius. Above the junction of Butternut creek, Chittenango creek flows through an irregular dumbbell-shaped area extending in a northwest and southeast direction. This area lies chiefly in the dissected, hilly region south of the line of the New York Central railroad. The length of the basin is about 22 miles. Its width in the upper portion is 9 miles; in the middle portion, 4 miles; in the lower portion, 7 miles. The drainage basin is deeply rolling, mostly cleared and has a heavy, impervious soil with extensive sodded-meadow areas. The soil is underlaid by shale rock, often outcropping, and affording numerous springs. The stream tributaries are somewhat sparse. Marsh and swamp areas are very limited, with the exception of the Nelson swamp, about two square miles in area.

There were formerly several water-powers in use in the deep narrow valley between Chittenango falls and Chittenango. The outflow from Cazenovia lake is regulated and there is also a reservoir at Erieville. These reservoirs are used to supply the summit level of the Erie canal. The capacities of these reservoirs are given as follows in New York State Barge Canal Report for 1901, page 663:

Erieville Reservoir.

Storage capacity	318,424 cubic feet
Tributary drainage area	5.4 square miles
Water-surface	340 acres

Cazenovia Lake.

Tributary drainage area	8.7 square miles
Storage capacity	206,997 cubic feet
Water-surface	1.7 square miles

The head of the stream is near Erieville reservoir, which is formed by a dam crossing a small stream valley, formerly tributary to Chenango river through Eaton brook. Results of gagings of Chittenango creek at Bridgeport, where the stream debouches into Oneida lake, may be found in the report of the State Engineer and Surveyor for 1902, supplement, pages 57–61. Cazenovia lake is located 10 miles below Erieville reservoir, which is at the head of the stream at elevation 1,190. From its outlet to the foot of the plateau at Erie canal crossing the stream descends 770 feet, the distance, following the general trend of the valley, being 11 miles. At Chittenango falls there occurs a precipitous descent of about 100 feet.

CHITTENANGO CREEK AT CHITTENANGO, N. Y.

A current-meter gaging station was established at Main street highway bridge in Chittenango village, May 22, 1901, by R. E. Horton, for the U. S. Geological Survey, by which it was maintained until July 9, 1905, when it was transferred to the care of this Department. Current-meter measurements have been taken and rating table made, from which the accompanying tables have been computed.

The stream at this point is entrained between parallel walls, affording a channel 50 feet wide, over which the bridge passes at a single span. The bridge stands at an angle to the thread of the stream, and has a span between abutments of 57 feet. The gage board is secured in a vertical position to the right abutment on the upstream side, and reads decimally from 0 to 8 feet. The stage of the stream is observed twice daily by the gage-reader, Bessie M. Kellogg. The bench-mark is on the upstream corner of the coping of the right-hand bridge abutment.

Elevation, bench-mark	458.39
Elevation, gage zero	450.16

The gaging station is one-half mile above the State dam, diverting water for the supply of the summit level of Erie canal. The freshet of December 15, 1901, changed the cross-section of the stream at the gaging station. Separate rating curves have been prepared for the periods preceding and following that date.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Chittenango Creek at Chittenango, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	451.91	452.41	452.41	452.61	451.86	451.81	451.51	451.31	451.42	451.42	451.52	451.57
2......	452.11	452.51	452.21	452.51	452.11	451.56	451.51	451.26	451.27	451.52	451.57	451.62
3......	452.36	452.71	452.01	452.51	451.81	451.51	451.51	451.31	451.32	451.42	451.42	451.82
4......	452.31	453.01	451.81	452.46	451.81	451.66	451.51	451.41	451.27	451.37	451.47	451.82
5......	452.11	452.91	451.66	454.01	451.76	451.81	451.41	451.41	451.22	451.42	451.62	451.62
6......	452.01	452.81	451.51	454.16	451.76	451.96	451.36	451.36	451.17	451.37	451.52	451.52
7......	452.26	452.61	451.61	454.11	451.61	451.71	451.31	451.41	451.32	451.42	451.47	451.57
8......	452.21	452.71	451.61	453.26	451.56	451.56	451.51	451.46	452.42	451.42	451.62	451.52
9......	452.41	452.81	451.66	453.11	451.66	451.51	451.31	451.41	451.97	451.32	451.47	451.62
10......	452.31	452.61	451.81	452.86	451.61	451.56	451.36	451.41	451.82	451.32	451.52	451.72
11......	452.11	452.51	451.81	452.81	451.66	451.61	451.41	451.41	451.52	451.27	451.52	451.72
12......	451.96	452.61	452.11	452.76	451.61	451.66	451.31	451.41	451.52	451.32	451.62	451.82
13......	452.11	452.61	452.01	452.71	451.56	451.81	451.31	451.36	451.52	451.22	451.72	452.42
14......	452.06	452.51	452.41	452.96	451.56	451.71	451.36	451.31	451.47	451.37	451.62	452.12
15......	452.21	452.51	452.71	452.81	451.71	451.61	451.46	451.36	451.47	451.42	451.47	452.32
16......	452.11	452.61	452.46	452.46	451.76	451.66	451.61	451.42	451.42	451.47	451.47	452.42
17......	452.01	452.81	452.11	452.31	451.71	451.61	451.96	451.42	451.42	451.42	451.42	452.12
18......	452.01	452.71	452.21	452.21	451.71	451.61	451.81	451.47	451.47	451.52	452.17	451.92
19......	452.06	452.51	452.21	452.26	451.71	451.56	451.41	451.42	451.42	451.62	452.12	451.87
20......	451.96	452.56	452.16	452.21	451.81	451.56	451.46	451.42	451.37	451.52	451.77	451.72
21......	451.91	452.71	452.11	452.16	451.71	451.61	451.51	451.42	451.27	451.47	451.62	451.62
22......	452.16	452.81	452.36	452.21	451.66	451.61	451.41	451.37	451.32	451.42	451.62	451.82
23......	452.06	452.71	452.66	452.11	451.71	451.66	451.41	451.37	451.27	451.72	451.52	452.47
24......	451.81	452.51	452.51	451.96	451.76	451.56	451.41	451.42	451.32	451.52	451.72	452.32
25......	451.91	452.61	452.31	451.96	451.96	451.56	451.46	451.47	451.32	451.47	451.52	452.12
26......	451.81	452.71	452.46	451.91	451.76	451.51	451.41	451.42	451.27	451.52	451.72	451.92
27......	452.36	452.61	455.16	451.81	451.71	451.86	451.41	451.37	451.32	451.42	451.72	452.22
28......	452.91	452.56	454.41	451.81	451.56	451.71	451.41	451.52	451.42	451.37	451.62	452.02
29......	452.71	......	453.16	451.71	451.61	451.56	451.46	451.72	451.62	451.52	452.22	451.72
30......	452.51	......	452.86	451.71	451.56	451.61	451.41	451.47	451.57	451.42	451.72	451.62
31......	452.56	......	452.66	......	451.56	......	451.46	451.42	......	451.67	......	451.82

Mean Daily Discharge, Second-feet, of Chittenango Creek at Chittenango, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	*108	225	225	295	100	92	55	38	45	*45	55	60
2......	145	258	168	*258	145	60	*55	35	35	55	60	65
3......	210	335	125	258	92	55	55	38	*38	45	45	*92
4......	195	462	92	240	92	*70	55	45	35	40	50	92
5......	145	*417	*70	1,002	85	92	45	45	32	45	*65	65
6......	125	375	55	1,100	85	115	40	*40	30	40	55	55
7......	180	295	65	1,068	*65	78	38	45	38	45	50	60
8......	*168	335	65	580	60	60	55	50	225	*45	65	55
9......	225	375	70	*508	70	55	*38	45	115	38	50	65
10......	195	295	92	395	65	60	40	45	*92	38	55	*78
11......	145	258	92	375	70	*65	45	45	55	35	55	78
12......	115	*295	*145	355	65	70	38	45	55	38	*65	92
13......	145	295	125	335	60	92	38	*40	55	32	78	225
14......	135	258	225	440	*60	78	40	38	50	40	65	145
15......	*168	258	335	375	78	65	50	40	50	*45	50	195
16......	145	295	240	*240	85	70	*65	45	45	50	50	225
17......	125	375	145	195	78	65	115	45	*45	45	45	*145
18......	125	335	168	168	78	*65	92	50	50	55	155	115
19......	135	*258	*168	180	78	60	45	45	45	65	*145	92
20......	115	275	155	168	92	60	50	*45	40	55	85	78
21......	108	335	145	155	*78	65	55	45	35	50	65	65
22......	*155	375	210	168	70	65	45	40	38	*45	65	92
23......	135	335	315	*145	78	70	*45	40	35	78	55	240
24......	92	258	258	115	85	66	45	45	*38	55	78	*195
25......	108	295	195	115	115	*60	50	50	38	50	55	145
26......	92	*335	*240	108	85	55	45	45	35	55	*78	108
27......	210	295	*a*	92	78	100	45	*40	38	45	78	168
28......	417	275	1,275	92	*60	78	45	55	45	40	65	125
29......	*335	......	530	78	65	60	50	78	65	*55	168	78
30......	258	......	395	*78	60	65	*45	50	60	45	78	65
31......	275	......	315	......	60	......	50	45	......	70	......	*92
Mean...	169	313	216	323	79	70	51	45	53	48	71	111

a Gage height above limits of rating table. * Sunday.

Monthly Discharge of Chittenango Creek at Chittenango, N. Y.
[Drainage area, 79 square miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	417	92	169	2.140	2.470
February	462	225	313	3.960	4.120
March	1,275a	55	216	2.730	3.150
April	1,100	78	323	4.090	4.560
May	145	60	79	1.000	1.150
June	115	55	70	0.886	0.988
July	115	38	51	0.646	0.745
August	78	35	45	0.570	0.657
September	225	30	53	0.671	0.749
October	78	32	48	0.608	0.701
November	168	45	71	0.899	1.000
December	240	55	111	1.410	1.630

a Actual maximum above limits of rating curve.

BUTTERNUT CREEK.

Description.

The head waters of Butternut creek lie at elevation 1,700 feet, near the south line of Onondaga county. This stream drains a narrow basin about 24 miles in length and having an average width of about 3 miles. The stream flows in a southerly direction. Jamesville reservoir is located 14 miles below the source at elevation about 640. North of Erie canal the stream flows out into the flat lands, at elevation about 400, which border Oneida lake for a width of several miles. Butternut creek is joined by Limestone creek near North Manlius at a point about 1½ miles above its junction with Chittenango creek. Erie canal crosses the stream 4½ miles below Jamesville. Above Erie canal crossing the slopes are steep and the tributaries are mostly short laterals. Jamesville reservoir has a capacity of 170,000,000 cubic feet. The water-surface area is 252 acres. At a distance of 2.35 miles below Jamesville is a dam which diverts part of the stream to the Orrville feeder. This feeder is 2.25 miles in length.

Butternut Creek near Jamesville, N. Y.

A gaging station was established on Butternut creek at the first bridge above the head of the Orrvile feeder, July 25, 1907, by Robert E. Horton, for this Department. The gage is located

about 2 miles below Jamesville, and measurements at this point will show the supply to the canal available from Jamesville reservoir and the Orrville feeder. A box-and-chain gage is bolted to the hand-rail of the bridge on the upstream side. The gage scale reads from zero to 7.5 feet, and the length of the chain is 13.00 feet. The current-meter measurements are made from the downstream side of the bridge, using the face of the right-hand abutments as an initial point. The bridge is subdivided at two-foot intervals and the span is 40 feet. The gage is read at 7 A. M. and 6 P. M. by Marie Brandt Brown.

Mean Daily Gage Height, in Feet, of Butternut Creek near Jamesville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	2.36	2.41	2.16	2.26	2.20	1.80	1.40	1.10	1.00	1.15	1.05	1.10
2......	2.31	2.36	2.06	2.31	2.15	1.80	1.40	1.10	1.00	1.15	1.10	1.10
3......	2.41	2.31	2.01	2.36	2.15	1.85	1.45	1.15	1.05	1.10	1.15	1.10
4......	2.31	2.31	2.11	2.36	2.20	1.75	1.40	1.20	1.20	1.15	1.10	1.10
5......	2.21	2.41	2.01	2.31	2.10	1.75	1.45	1.20	1.20	1.20	1.10	1.15
6......	2.16	2.41	2.06	2.31	2.15	1.75	1.50	1.20	1.20	1.20	1.20	1.20
7......	2.11	2.41	2.06	2.26	2.10	1.70	1.45	1.25	1.25	1.20	1.20	1.20
8......	2.11	2.31	1.91	2.26	2.10	1.75	1.40	1.30	1.30	1.20	1.15	1.15
9......	2.11	2.31	1.86	2.46	2.10	1.75	1.40	1.25	1.25	1.20	1.15	1.15
10......	2.16	2.31	1.86	2.41	2.00	1.80	1.50	1.20	1.30	1.20	1.20	1.15
11......	2.16	2.26	1.91	2.41	2.00	1.65	1.50	1.30	1.25	1.20	1.20	1.10
12......	2.21	2.31	2.11	2.36	2.00	1.65	1.50	1.30	1.20	1.20	1.15	1.10
13......	2.16	2.26	2.11	2.41	2.00	1.55	1.45	1.25	1.20	1.20	1.15	1.10
14......	2.16	2.31	2.06	2.46	1.95	1.50	1.40	1.20	1.15	1.20	1.10	1.10
15......	2.16	2.26	2.11	2.46	1.95	1.45	1.40	1.20	1.10	1.20	1.10	1.10
16......	2.21	2.26	2.11	2.36	1.90	1.50	1.45	1.20	1.10	1.20	1.10	1.10
17......	2.11	2.26	2.06	2.36	1.90	1.50	1.50	1.20	1.10	1.20	1.10	1.10
18......	2.06	2.26	2.11	2.41	1.90	1.50	1.50	1.20	1.15	1.20	1.10	1.10
19......	2.06	2.21	2.16	2.36	1.90	1.50	1.45	1.25	1.20	1.20	1.15	1.10
20......	1.96	2.26	2.16	2.46	1.90	1.50	1.50	1.20	1.20	1.15	1.20	1.10
21......	2.01	2.26	2.21	2.41	1.85	1.50	1.50	1.20	1.10	1.10	1.20	1.10
22......	2.11	2.21	2.26	2.36	1.80	1.50	1.50	1.20	1.10	1.10	1.20	1.10
23......	2.26	2.21	2.26	2.31	1.80	1.50	1.50	1.20	1.10	1.15	1.15	1.10
24......	2.26	2.21	2.26	2.31	1.85	1.40	1.45	1.15	1.10	1.20	1.15	1.10
25......	2.41	2.16	2.26	2.26	1.90	1.40	1.45	1.15	1.15	1.15	1.15	1.10
26......	2.46	2.26	2.36	2.26	1.90	1.40	1.45	1.10	1.20	1.15	1.15	1.10
27......	2.51	2.26	2.36	2.21	1.90	1.45	1.40	1.20	1.20	1.15	1.10	1.10
28......	2.51	2.26	2.36	2.21	1.90	1.45	1.35	1.10	1.20	1.10	1.10	1.10
29......	2.41	......	2.36	2.21	1.90	1.40	1.30	1.05	1.20	1.10	1.10	1.10
30......	2.46	......	2.36	2.21	1.90	1.40	1.20	1.05	1.20	1.10	1.10	1.10
31......	2.41	......	2.36	......	1.85	......	1.15	1.00	......	1.10	......	1.10

Current-meter Discharge Measurement of Butternut Creek near Jamesville, N. Y.

DATE.	Hydrographer.	Gage Reading. Beginning.	Gage Reading. Ending.	Gage Reading. Mean.	Meter No.	Lateral interval.	Submergence depth.	Total area.	Total width.	Computed discharge.
						Feet.		*Sq. ft.*	*Feet.*	*Sec.-ft.*
1911. July 24	R. N. Barrett............	1.37	1.40	1.38	462	2	0.6	32.38	37.5	35.50

Mean Daily Discharge, Second-feet, of Butternut Creek near Jamesville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	*152	160	120	136	126	76	38	16	12	*19	13	16
2......	144	152	107	*144	119	76	*38	16	12	19	16	16
3......	160	144	101	152	119	82	42	19	*13	16	19	*16
4......	144	144	113	152	126	*71	38	22	22	19	16	16
5......	128	*160	*101	144	112	71	42	22	22	22	*16	19
6......	120	160	107	144	119	71	46	*22	22	22	22	22
7......	113	160	107	136	*112	66	42	26	26	22	22	22
8......	*113	144	89	136	112	71	38	30	30	*22	19	19
9......	113	144	83	*169	112	71	*38	26	26	22	19	19
10......	120	144	83	160	100	76	46	22	*30	22	22	*19
11......	120	136	89	160	100	*61	46	30	26	22	22	16
12......	128	*144	*113	152	100	61	46	30	22	22	*19	16
13......	120	136	113	160	100	51	42	*26	22	22	19	16
14......	120	144	107	169	*94	46	38	22	19	22	19	16
15......	*120	136	113	169	94	42	38	22	16	*22	16	16
16......	128	136	113	*152	88	46	*42	22	16	22	16	16
17......	113	136	107	152	88	46	46	22	*16	22	16	*16
18......	107	136	113	160	88	*46	46	22	19	22	16	16
19......	107	*128	*120	152	88	46	42	26	22	22	*19	16
20......	95	136	120	169	88	46	46	*22	22	19	22	16
21......	101	136	128	160	*82	46	46	22	16	16	22	16
22......	*113	128	136	152	76	46	46	22	16	*16	22	16
23......	136	128	136	*144	76	46	*46	22	16	19	19	16
24......	136	128	136	144	82	38	42	19	*16	22	19	*16
25......	160	120	136	136	88	*38	42	19	19	19	19	16
26......	169	*136	*152	136	88	38	42	16	22	19	*19	16
27......	178	136	152	128	88	42	38	*22	22	19	16	16
28......	178	136	152	128	*88	42	34	16	22	16	16	16
29......	*160	......	152	128	88	38	30	13	22	*16	16	16
30......	169	......	152	*128	88	38	*22	13	22	16	16	16
31......	160	......	152	......	82	......	19	12	......	16	......	*16
Mean...	133	140	119	148	97	54	40	21	20	20	18	17

* Sunday.

Monthly Discharge of Butternut Creek near Jamesville, N. Y.
[Drainage area, 53 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	178	95	133	2.510	2.890
February	160	120	140	2.640	2.750
March	152	83	119	2.250	2.590
April	169	128	148	2.790	3.110
May	126	76	97	1.830	2.110
June	82	38	54	1.020	1.140
July	46	19	40	0.755	0.870
August	30	12	21	0.396	0.456
September	30	12	20	0.377	0.421
October	22	16	20	0.377	0.435
November	22	13	18	0.340	0.379
December	22	16	17	0.321	0.370

LIMESTONE CREEK.

DESCRIPTION.

The natural source of Limestone creek is on the slope of Tinselor hills near Erieville, Madison county, N. Y. In the construction of the Chenango canal, Tioughnioga creek was diverted and

DeRuyter reservoir receives the drainage tributary to this stream above the point of diversion and also that from additional area tributary to Limestone creek, making a total area above the reservoir outlet of 18.8 square miles. The reservoir has a capacity of 504,468,000 cubic feet, and a surface area of about 1.0 square mile. The stored waters are discharged through Limestone creek during the canal navigation season. Water is diverted to a feeder by a dam below Manlius. The feeder is used as a water-power canal to supply several mills at Fayetteville, at which place there is a second diverting dam. The feeder enters Erie canal 1.2 miles below Fayetteville. Power is also developed on Limestone creek at Manlius and Edwards Falls. The head waters of Limestone creek are at elevation 1,900 feet. DeRuyter reservoir is at elevation 1,286 feet. The fall of the stream is rapid in the first three miles below the reservoir, the elevation at the lower end of this reach at Delphi being 900 feet. From Delphi to Buellville the creek follows a winding course over a flat valley bottom averaging about one-half mile in width. The descent in 8 miles between these points is 150 feet. Between Buellville and Manlius, a distance of two miles, a fall of 200 feet occurs. This is mostly concentrated at Edwards Falls. The west or Watervale branch of Limestone creek joins the main stream below Manlius. The precipitous descent of about 100 feet in a short distance occurs at this branch at stone quarry falls. The drainage basin is shown on the Syracuse, Tully, Chittenango and Cazenovia sheets of the United States Geological Survey topographic map.

LIMESTONE CREEK AT FAYETTEVILLE, N. Y.

This gaging station, which is located above the State dam at the head of the Erie canal feeder in Fayetteville, was established August 27, 1905, by C. A. Poole.

The gage is a vertical board, graduated in feet and tenths, and is secured to retaining wall on south side of gates at entrance to feeder, about 55 feet above crest of dam. The elevation of zero of gage is 429.53. The elevation of bench-mark on east end of north retaining wall of feeder, 42 feet east of gates, is 434.74. Observations are taken twice daily by C. B. Dunlop.

The dam is of masonry and in good condition, having been rebuilt in 1897. It is of trapezoidal shape with an approach slope of 1 to 6 and vertical downstream face. The length of crest is 99.1 feet at an average elevation of 431.18.

The flow in the feeder is controlled by gateways at entrance. There are four openings in the bulkhead, which are regulated by means of drop planks.

A gage was temporarily maintained in the canal feeder at Fayetteville, but the fluctuation was so slight that it has been discontinued.

Water is also diverted through the cement mill on east side of creek. Current-meter measurements were formerly made in the raceway to mill, and in the canal feeder. The freshet discharge of the stream can be determined at this site, but a separate gaging station was established at Manlius in July, 1907, to determine the low-water flow.

Computations of discharge are not at present available.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Limestone Creek Feeder at Fayetteville, N. Y.

DAY.	Jan.*a*	Feb.*a*	Mar.*a*	April.*a*	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.*a*
1910.												
1	......	......	......	......	*a*	428.87	428.77	428.97	429.17	429.02	428.97	......
2	......	......	......	......	*a*	428.87	428.92	429.07	429.07	429.07	429.02	......
3	......	......	......	......	*a*	428.92	429.02	429.07	429.07	428.97	429.07	......
4	......	......	......	......	*a*	428.97	429.07	429.07	429.12	428.92	429.07	......
5	......	......	......	......	*a*	429.12	429.02	429.07	429.12	428.87	429.12	......
6	......	......	......	......	*a*	429.12	428.97	428.92	429.27	428.97	429.17	......
7	......	......	......	......	*a*	429.17	428.82	428.82	429.12	429.07	429.07	......
8	......	......	......	......	*a*	429.07	428.92	428.82	429.07	429.02	429.02	......
9	......	......	......	......	*a*	428.97	428.82	428.87	429.12	428.92	428.97	......
10	......	......	......	......	*a*	429.02	428.82	428.97	429.07	428.87	429.12	......
11	......	......	......	......	*a*	429.07	428.97	429.07	429.07	428.92	429.07	......
12	......	......	......	......	*a*	429.17	428.87	429.07	429.07	428.87	429.02	......
13	......	......	......	......	*a*	429.07	428.92	429.02	428.97	428.87	429.07	......
14	......	......	......	......	*a*	428.92	428.97	428.92	429.07	428.82	429.07	......
15	......	......	......	......	*a*	428.97	428.97	429.07	429.07	428.87	429.02	......
16	......	......	......	......	426.87	428.97	428.97	429.07	429.02	428.77	*a*	......
17	......	......	......	......	427.27	429.02	428.92	429.07	429.07	428.87	*a*	......
18	......	......	......	......	427.62	429.07	428.87	429.02	429.02	428.92	*a*	......
19	......	......	......	......	428.57	429.02	428.97	429.17	429.02	428.97	*a*	......
20	......	......	......	......	428.72	428.97	429.07	429.07	429.07	429.07	*a*	......
21	......	......	......	......	429.07	428.97	429.07	429.07	429.07	429.07	*a*	......
22	......	......	......	......	428.97	429.07	429.07	429.07	428.97	429.07	*a*	......
23	......	......	......	......	428.97	429.02	429.07	429.17	428.92	428.92	*a*	......
24	......	......	......	......	428.97	428.97	428.92	429.12	429.02	429.02	*a*	......
25	......	......	......	......	429.07	428.97	428.92	429.02	429.12	429.07	*a*	......
26	......	......	......	......	428.97	428.87	429.07	429.12	429.22	428.97	*a*	......
27	......	......	......	......	428.97	428.82	428.97	429.07	429.17	429.02	*a*	......
28	......	......	......	......	428.92	428.87	429.07	429.12	429.07	429.07	*a*	......
29	......	......	......	......	428.97	428.87	429.07	429.07	429.07	429.07	*a*	......
30	......	......	......	......	428.97	428.77	429.07	429.02	429.12	429.07	*a*	......
31	......	......	......	......	428.92	......	428.92	429.07	......	429.02	*a*	......

NOTE.— This table supersedes that published on page 381 of the State Engineer's report for 1910

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Limestone Creek Feeder at Fayetteville, N. Y.

DAY.	Jan.*a*	Feb.*a*	Mar.*a*	April.*a*	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec *a*
1911.												
1	......	......	......	......	*a*	429.02	428.82	428.72	428.87	428.87	428.72	......
2	......	......	......	......	*a*	429.07	428.87	428.77	428.77	428.92	428.82	......
3	......	......	......	......	*a*	428.97	428.92	428.82	428.92	428.87	428.87	......
4	......	......	......	......	*a*	429.02	428.72	428.82	429.02	428.92	428.87	......
5	......	......	......	......	*a*	429.07	428.72	428.67	429.07	428.77	428.72	......
6	......	......	......	......	*a*	429.12	428.87	428.67	429.02	428.72	428.67	......
7	......	......	......	......	*a*	429.07	428.87	428.72	428.92	428.97	428.82	......
8	......	......	......	......	*a*	429.07	428.82	428.77	429.17	429.07	428.87	......
9	......	......	......	......	*a*	428.97	428.87	428.72	429.22	428.92	428.82	......
10	......	......	......	......	*a*	428.87	428.87	428.77	429.12	428.82	428.87	......
11	......	......	......	......	*a*	428.97	428.77	428.82	429.07	428.67	428.92	......
12	......	......	......	......	*a*	429.02	428.82	428.87	429.02	428.82	429.02	......
13	......	......	......	......	*a*	429.12	428.87	428.92	428.97	429.27	429.02	......
14	......	......	......	......	*a*	429.07	428.77	428.87	428.92	428.77	429.07	......
15	......	......	......	......	*a*	429.07	428.72	428.77	429.02	428.67	429.12	......
16	......	......	......	......	428.07	429.12	428.67	428.87	429.07	428.82	429.07	......
17	......	......	......	......	428.52	429.07	428.92	428.82	429.22	428.82	428.97	......
18	......	......	......	......	428.87	429.02	429.12	428.87	429.17	428.92	429.07	......
19	......	......	......	......	428.92	428.97	429.07	428.92	429.07	428.97	*a*	......
20	......	......	......	......	428.92	429.07	429.02	428.77	429.02	428.97	*a*	......
21	......	......	......	......	428.92	429.07	428.97	428.82	429.07	428.92	*a*	......
22	......	......	......	......	428.97	428.92	428.92	428.77	429.07	429.02	*a*	......
23	......	......	......	......	428.82	429.02	428.82	428.72	428.97	429.07	*a*	......
24	......	......	......	......	429.02	428.82	428.77	428.82	428.87	428.92	*a*	......
25	......	......	......	......	429.07	428.72	428.72	428.92	428.82	428.87	*a*	......
26	......	......	......	......	429.07	428.62	428.87	428.97	428.67	428.82	*a*	......
27	......	......	......	......	428.97	428.87	428.92	428.87	428.67	428.82	*a*	......
28	......	......	......	......	428.82	429.07	428.82	428.82	428.72	428.87	*a*	......
29	......	......	......	......	428.87	428.97	428.82	428.92	428.82	428.72	*a*	......
30	......	......	......	......	428.72	428.92	428.82	429.07	428.87	428.67	*a*	......
31	......	......	......	......	428.77	......	428.82	428.92	......	*a*	*a*	......

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Limestone Creek above Dam at Fayetteville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	432.48	*a*	432.33	432.38	431.43	431.48	431.08	430.78	430.88	430.88	430.68	431.13
2	432.53	432.43	432.28	432.33	431.73	431.43	431.03	430.83	430.78	430.93	430.53	430.98
3	432.83	*a*	432.38	432.28	431.53	431.28	431.13	430.88	430.68	430.78	430.63	430.98
4	432.83	432.58	432.33	432.28	431.45	431.13	430.98	430.78	430.73	430.93	430.58	431.03
5	432.83	432.28	432.28	432.48	431.53	431.28	430.93	430.68	430.58	430.83	430.48	431.08
6	432.83	432.33	432.28	432.48	431.38	431.38	431.03	430.58	430.68	430.83	430.48	431.18
7	432.83	432.38	432.33	432.43	431.48	431.38	431.13	430.68	430.48	431.03	430.68	431.23
8	432.63	432.43	432.38	432.33	430.98	431.28	431.23	430.78	431.08	431.03	430.78	431.38
9	432.43	432.48	432.33	432.28	430.13	431.18	431.08	430.68	431.28	431.08	430.68	431.43
10	432.28	432.48	432.48	432.28	429.63	430.98	430.98	430.53	431.18	430.83	430.58	431.38
11	432.38	432.43	432.43	432.08	429.53	431.18	430.93	430.68	431.03	430.78	430.78	431.33
12	432.23	432.48	432.53	431.93	429.53	431.28	430.78	430.78	431.08	430.73	430.88	431.33
13	432.43	432.53	432.48	431.88	429.53	431.48	430.88	430.78	431.13	430.78	430.98	432.08
14	432.43	432.48	432.58	431.93	429.78	431.33	430.93	430.83	431.08	430.63	431.08	432.03
15	432.28	432.38	432.73	431.88	429.53	431.38	430.83	430.68	331.18	430.68	431.18	432.03
16	432.28	432.48	432.53	431.68	429.53	431.33	430.78	430.78	431.13	430.73	431.28	431.88
17	432.28	432.58	432.43	431.78	429.88	431.28	431.18	430.68	431.18	430.48	431.08	431.93
18	432.28	432.38	432.63	431.83	430.13	431.33	431.28	430.78	431.13	430.93	431.18	431.83
19	432.28	432.38	432.58	431.78	430.08	431.18	431.13	430.88	431.08	431.13	431.33	431.68
20	432.28	432.43	432.48	431.73	430.28	431.23	430.98	430.83	430.98	431.23	431.28	431.83
21	432.38	432.38	432.53	431.68	430.63	431.28	430.93	430.78	431.03	431.08	431.38	431.83
22	432.28	432.43	432.73	431.78	430.78	431.08	430.88	430.83	431.08	431.18	431.43	431.88
23	432.23	432.38	432.53	431.83	430.63	431.28	430.83	430.68	430.98	431.28	431.48	432.38
24	432.28	432.33	432.38	431.68	430.93	431.33	430.88	430.73	431.03	431.08	431.53	432.23
25	432.38	432.43	432.43	431.73	431.18	431.18	430.83	430.88	431.13	430.98	431.53	432.08
26	432.43	432.33	432.58	431.78	431.38	431.18	430.88	431.08	430.78	430.93	431.58	431.98
27	432.48	432.38	432.88	431.73	431.33	431.48	431.08	430.98	430.53	431.08	431.53	432.08
28	432.68	432.33	432.98	431.58	431.13	431.63	430.78	430.88	430.48	431.13	431.48	431.93
29	432.63	......	432.63	431.48	431.08	431.28	430.83	431.08	430.78	430.98	431.38	431.83
30	432.48	......	432.48	431.53	431.18	431.23	430.78	431.18	430.58	430.88	431.33	431.83
31	*a*	......	432.43	......	431.23	......	430.88	430.98	......	430.83	......	431.83

No record .

LIMESTONE CREEK AT MANLIUS, N. Y.

A gaging station was established July 23, 1907, by Robert E. Horton, for this Department, at Wilcox avenue bridge in Manlius. The gage consists of a triangular box containing a scale graduated to tenths from zero to 7.4, and a chain and weight by which the readings are taken. The gage is attached to the bottom chord on the downstream side of the brige. The length of the chain and weight is 14.00 feet. Readings are taken by John Carroll at 7 A. M. and 6 P. M. each day. Current-meter measurements are made from the downstream side of the bridge, starting at the face of the left-hand abutment as an initial point. The bridge is subdivided into 2.5-foot sections for purposes of measurement. The span is 73 feet.

Mean Daily Gage Height, in Feet, of Limestone Creek at Manlius, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	2.92	2.85	3.25	4.15	3.32	2.65	2.70	2.60	2.60	2.70	2.70	2.70
2.....	2.78	3.25	3.20	4.30	3.15	2.72	2.60	2.60	2.60	2.70	2.50	2.70
3.....	4.25	3.42	3.45	4.05	3.08	2.60	2.60	2.60	2.50	2.50	2.50	2.60
4.....	3.90	3.30	2.58	4.25	3.20	2.68	2.60	2.50	2.50	2.50	2.50	2.60
5.....	3.40	3.15	2.80	4.30	3.20	2.70	2.60	2.50	2.50	2.50	2.50	2.50
6.....	3.20	3.15	3.50	4.15	3.20	2.80	2.60	2.50	2.50	2.50	2.50	2.50
7.....	2.95	3.05	3.48	4.32	3.12	2.70	2.60	2.50	2.50	2.70	2.50	2.50
8.....	3.00	3.30	3.25	4.05	3.02	2.70	2.60	2.50	3.40	2.70	2.60	2.50
9.....	3.48	3.15	3.30	4.35	2.70	2.60	2.60	2.50	3.20	2.50	2.60	2.60
10.....	3.25	2.20	3.85	4.12	2.82	2.60	2.60	2.50	2.90	2.50	2.50	2.50
11.....	3.40	2.90	3.95	4.38	2.88	2.70	2.60	2.50	2.80	2.70	2.50	2.50
12.....	3.88	2.88	4.15	3.60	2.78	2.80	2.60	2.50	2.60	2.70	2.70	2.60
13.....	3.90	2.70	3.78	3.95	2.90	2.70	2.60	2.50	2.60	2.40	2.70	3.40
14.....	3.30	3.38	3.50	3.82	2.80	2.80	2.60	2.50	2.30	2.40	2.50	2.80
15.....	2.90	3.25	3.05	3.15	2.68	2.80	2.60	2.50	2.30	2.40	2.50	2.80
16.....	2.80	3.25	3.80	3.25	2.55	2.70	2.80	2.50	2.30	2.40	2.80	3.30
17.....	2.85	3.40	3.85	3.05	2.85	2.70	3.20	2.50	2.40	2.10	2.80	2.90
18.....	3.20	3.20	3.68	3.55	2.68	2.70	2.80	2.50	2.10	2.10	2.60	2.70
19.....	2.88	3.35	4.05	3.22	2.85	2.60	2.70	2.50	2.10	2.70	2.60	2.50
20.....	2.85	3.48	3.80	3.42	2.82	2.70	2.70	2.40	2.10	2.70	2.50	2.50
21.....	3.10	3.10	4.05	3.00	2.62	2.80	2.60	2.40	2.20	2.80	2.50	2.70
22.....	2.50	3.85	4.38	3.38	2.32	2.80	2.60	2.30	2.40	2.60	2.50	3.40
23.....	3.28	3.42	4.45	3.45	2.85	2.80	2.60	2.30	2.40	2.50	2.70	3.80
24.....	3.40	3.30	3.78	3.22	2.80	2.70	2.00	2.30	1.80	2.50	2.70	3.50
25.....	3.40	3.05	3.85	2.88	2.72	2.60	2.50	2.30	1.80	2.70	2.70	3.10
26.....	3.90	3.30	3.55	2.85	2.65	2.60	2.50	2.30	2.50	2.70	2.70	3.10
27.....	3.80	3.45	3.95	3.38	2.62	2.70	2.50	2.40	2.00	2.50	2.50	3.50
28.....	3.50	3.32	3.82	3.25	2.72	2.80	2.40	2.40	2.50	2.50	2.80	3.50
29.....	3.38	......	4.15	2.95	2.72	2.80	2.50	2.70	2.60	2.50	2.80	3.20
30.....	3.38	......	4.35	3.10	2.88	2.70	2.60	2.70	2.60	2.70	2.80	3.20
31.....	3.52	......	4.10	......	2.68	......	2.60	2.70	......	2.70	......	2.80

Current-meter Discharge Measurement of Limestone Creek at Manlius, N. Y.

DATE.	Hydrographer.	Gage Reading. Beginning.	Gage Reading. Ending.	Gage Reading. Mean.	Meter No.	Lateral interval.	Submergence depth.	Total area.	Computed discharge.	Velocity correction factor.	Corrected discharge.
						Feet.		Sq. ft.	Sec.-ft.		Sec.-ft.
1911. July 24..	R. N. Barrett....	1.92	1.91	1.91	462	2	0.6	15.99	7.23	1.00	7.23

Mean Daily Discharge, Second-feet, of Limestone Creek at Manlius, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	*115	103	174	346	188	72	80	64	64	*80	80	80
2.....	91	174	164	*378	155	83	*64	64	64	80	52	80
3.....	367	206	211	327	142	64	64	64	*52	52	52	*64
4.....	280	184	62	367	164	*77	64	52	52	52	52	64
5.....	202	*155	*94	378	164	80	64	52	52	52	*52	52
6.....	164	155	220	346	164	94	64	*52	52	52	52	52
7.....	120	137	216	382	*150	80	64	52	52	80	52	52
8.....	*128	184	174	327	132	80	64	52	202	*80	64	52
9.....	216	155	184	*389	80	64	*64	52	164	52	64	64
10.....	174	20	289	340	98	64	64	52	*112	52	52	*52
11.....	202	112	308	396	108	*80	64	52	94	80	52	52
12.....	294	*108	*346	240	91	94	64	52	64	80	*80	64
13.....	298	80	276	308	112	80	64	*52	64	40	80	202
14.....	184	198	220	284	*94	94	64	52	30	40	52	94
15.....	*112	174	137	155	77	94	64	52	30	*40	52	94
16.....	94	174	280	*174	58	80	*94	52	30	40	94	184
17.....	103	202	289	137	103	80	164	52	*40	a14	94	*112
18.....	164	164	256	230	77	*80	94	52	a14	a14	64	80
19.....	108	*193	*327	168	103	64	80	52	a14	80	*64	52
20.....	103	216	280	206	98	80	80	*40	a14	80	52	52
21.....	146	146	327	128	*67	94	64	40	20	94	52	80
22.....	*52	289	396	198	32	94	64	30	40	*64	52	202
23.....	180	206	411	*211	103	94	*64	30	40	52	80	280
24.....	202	184	276	168	94	80	a10	30	*a4	52	80	*220
25.....	202	137	289	108	83	*64	52	30	a4	80	80	146
26.....	298	*184	*230	103	72	64	52	30	52	80	*80	146
27.....	280	211	308	198	67	80	52	*40	a10	52	52	220
28.....	220	188	284	174	*83	94	40	40	52	52	94	220
29.....	*198	......	346	120	83	94	52	80	64	*52	94	164
30.....	198	......	389	*146	108	80	*64	80	64	80	94	164
31.....	224	......	336	......	77	......	64	80	......	80	......	*94
Mean...	184	166	261	248	104	81	67	51	54	61	67	114

a Water impounded upstream. * Sunday.

Monthly Discharge of Limestone Creek at Manlius, N. Y.
[Drainage area, 67 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	367	52	184	2.750	3.170
February	289	20	166	2.480	2.580
March	411	62	261	3.900	4.500
April	396	103	248	3.700	4.130
May	188	32	104	1.550	1.790
June	94	64	81	1.210	1.350
July	164	10	67	1.000	1.150
August	80	30	51	0.761	0.877
September	202	4	54	0.806	0.899
October	94	14	61	0.910	1.050
November	94	52	67	1.000	1.120
December	280	52	114	1.700	1.960

ONEIDA CREEK.

DESCRIPTION.

The head waters of Oneida creek are in northeastern Madison county. Above Peterboro the drainage is mostly through a swamp averaging one-half mile in width by 2½ miles in length The stream flows easterly from this swamp to the foot of the falls

above Munnsville. In the vicinity of the falls the stream descends from elevation 1,100 to elevation 700 in about three miles. From Munnsville to Oneida the creek flows through a somewhat dissected valley of one mile average width, bordered by steep slopes rising 500 feet or more within a distance of one mile on either side. North of Oneida Castle the drainage is rather flat. Oneida creek enters the eastern end of Oneida lake near South Bay, the elevation of the lake being at 370. Water-power is utilized at Oneida Community and at Munnsville. A feeder dam at Oneida Castle diverts most of the low-water flow to the Erie canal through a feeder 2.9 miles long entering the canal at Durhamville. The drainage basin as a whole is irregularly pear-shaped and the upper basin is broad. The slopes are steep and the tributaries are well distributed and moderately branching. This basin is shown on the Morrisville, Oneida, Chittenango and Cazenovia sheets of the U. S. Geological Survey topographic map.

ONEIDA CREEK AT KENWOOD, N. Y.

A gaging station was established at the Oneida Community Dam and Silk Mill, June 11, 1907, by Robert E. Horton. A four-foot enamelled steel gage graduated to hundredths of feet is attached to a tree on the left-hand bank of Oneida creek, 175 feet upstream from the dam. The dam is of timber, having a crest length of 79.25 feet. The crest is nearly level and the cross-section is uniform throughout the entire length. A board gage with painted 10th-foot marks was also placed in the tail-race immediately below the silk mill. The silk mill contains one 24-inch Hercules and one 24-inch Camden water-wheel. Records are kept by H. L. Mason, showing the crest and tail-race gage readings each morning and night, together with the gate opening and number of hours run per day for each water-wheel. The elevations are referred to an assumed bench-mark consisting of a chiselled cross on the upstream corner of the right-hand abutment of the dam.

Elevation of assumed bench-mark..................	100.00
Elevation of crest gage zero......................	94.01
Mean crest elevation, about......................	95.60
Tail-race gage zero	82.97

Current-meter measurements were made in the tail-race to determine the turbine discharge in 1907.

The results of gagings at this station, 1898 to 1900, inclusive, may be found in the report of State Engineer and Surveyor for 1902, supplement, pages 49–52. Additional data is given in the report for 1906, supplement, pages 138–139.

Mean Daily Discharge, Second-feet, of Oneida Creek at Kenwood, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	*81	60	45	112	97	96	30	35	47	*55	26	66
2.....	81	54	58	*81	109	99	*81	34	56	50	25	42
3.....	109	46	71	127	96	96	81	30	*81	31	46	*81
4.....	62	79	84	113	49	*81	76	25	81	47	62	68
5.....	41	*81	*81	129	44	90	85	40	51	48	*81	57
6.....	52	65	52	117	67	98	79	*81	47	49	56	59
7.....	64	60	34	117	*81	83	69	71	54	68	46	48
8.....	*81	54	43	104	96	53	77	56	95	*81	44	35
9.....	60	60	70	*81	96	39	*81	70	98	40	25	66
10.....	77	49	65	116	89	50	45	63	*81	48	50	*81
11.....	77	62	79	113	84	*81	24	71	104	50	82	109
12.....	88	*81	*81	104	61	69	15	50	75	55	*81	109
13.....	53	66	99	104	80	61	4	*81	49	40	51	97
14.....	90	54	91	113	*81	57	7	59	32	53	63	109
15.....	*81	45	83	101	72	54	10	40	22	*81	53	96
16.....	60	35	89	*81	52	45	*81	49	55	83	56	99
17.....	31	53	90	104	79	67	89	30	*81	71	81	*81
18.....	29	116	93	108	43	*81	81	38	37	68	98	85
19.....	45	*81	*81	96	35	81	55	48	35	50	*81	72
20.....	37	70	83	100	36	54	66	*81	81	46	82	48
21.....	68	53	76	82	*81	54	58	60	81	24	66	49
22.....	*81	59	91	101	60	74	65	35	81	*81	66	59
23.....	49	53	81	*81	40	65	*81	37	81	32	76	85
24.....	42	59	74	88	88	68	56	22	*81	48	72	*81
25.....	41	75	92	89	95	*68	45	42	81	26	67	81
26.....	47	*81	*109	97	96	111	41	61	60	49	*81	81
27.....	68	70	155	73	97	122	39	*81	77	50	93	85
28.....	44	35	179	97	*81	97	38	63	46	66	80	81
29.....	*81	......	153	97	96	90	83	44	40	*81	64	81
30.....	76	......	121	*81	81	47	*81	47	60	72	81	81
31.....	53	......	94	......	96	......	58	44	......	30	......	**a*
Mean...	62.9	62.7	87.0	100	76.1	74.4	57.5	51.2	65.0	53.9	64.5	75.7

a No record. * Sunday.

Monthly Discharge of Oneida Creek at Kenwood, N. Y.
[Drainage area, 63 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on drainage area.
1911					
January	109	29	62.9	0.998	1.150
February	116	35	62.7	0.995	1.040
March	179	34	87.0	1.380	1.590
April	129	73	100.0	1.590	1.780
May	109	35	76.1	1.210	1.390
June	122	39	74.4	1.180	1.320
July	89	4	57.5	0.913	1.050
August	81	22	51.2	0.813	0.935
September	104	22	65.0	1.030	1.150
October	83	24	53.9	0.856	0.984
November	98	25	64.5	1.020	1.140
December	109	35	75.7	1.200	1.380

SENECA RIVER AND DRAINAGE BASIN.

DESCRIPTION.

Seneca river receives the drainage from the central group of lakes lying southward from Lake Ontario, known as the finger lakes. The drainage basin is rolling, though not precipitous, excepting for the deep narrow valleys crossing it, in which the lakes are situated, and certain additional valleys not at the present time occupied by lakes. All of the lakes properly belonging to the finger lake system do not drain into the Seneca river. Oneida lake on the east is tributary to Oneida river, while on the west of the Seneca river there is a series of lakes, including Honeoye, Canadice, Hemlock and Conesus lakes, smaller than, but parallel with and otherwise similar to the main finger lakes, which are tributary to Genesee river. The upper lakes of the system in the Seneca river basin are Onondaga, Otisco, Skaneateles, Owasco, Cayuga, Seneca, Keuka and Canandaigua lakes.

The stream designated as Seneca river originates at the outlet of Seneca lake, flows easterly to the foot of Cayuga lake, which discharges into it, and then northerly through the extensive Montezuma marshes to a point near Savannah where it leaves the broad marsh area and turns easterly, passing to the north of Syracuse, and receiving Onondaga outlet, then turning northerly and joining Oneida river at Three River Point to form the Oswego river. The most important tributaries of Seneca river are the outlets of Onondaga, Otisco, Skaneateles and Owasco lakes, and Clyde river, which enters the Seneca river near Clyde, and which in turn is formed by the junction of Mud creek and Canandaigua outlet at Lyons.

WATER-SURFACE ELEVATION RECORDS ON SENECA RIVER AND TRIBUTARIES.

The following tables show the mean daily elevation of water-surface at different gages maintained on Seneca river and tributaries during the year 1911. The elevation of water-surface is referred to Barge canal datum, which is equivalent to mean tide at New York, taking the bench-mark at Greenbush (Rensselaer) as 14.73.

The accompanying table shows the details of the different gages and the manner in which the readings are taken.

Water-surface Elevation Gages Maintained on the Seneca River and Tributaries During the Year 1911.

LOCATION.	Date established.	Observer.	Elevation of zero mark (B. C. datum).	Type of gage.	Subdivision of gage.	Readings taken to
Seneca river.						
Belgium, highway bridge	April 14, 1904	Solomon Watts	358.27	Chain	1/10 Foot	1/10 Foot
Liverpool, Mud lock, No. 5	April 16, 1904	Frank Shane	361.37	Staff	1/10 "	1/10 "
Baldwinsville, below dam	Nov. 12, 1898	Charles Brannock	361.75	Chain	....	....
Baldwinsville, above dam	" " "	" "	372.27	Staff	1/10 Foot	5/100 Foot
Memphis, below Jack's Reef	April 20, 1904	Wm. H. Burns	374.02	"	1/10 "	1/10 "
Jordan, Crosslake bridge	May 1, 1904	Mark Quimby	373.59	"	1/10 "	1/10 "
Port Byron, Mosquito Point bridge	April 21, 1904	Wm. Prettie	372.85	"	1/10 "	1/10 "
Savannah	May 4, 1904	J. H. Rupert	376.00	Chain	1/10 "	1/10 "
Seneca Falls, near Cayuga lake	Oct. 10, 1905	A. Demont	381.42	Staff	1/10 "	5/100 "
Seneca Falls, above lock No. 8	Aug. 11, 1909	"	384.73	"	1/10 "	1/10 "
Seneca Falls, below lock No. 7	Aug. 7, 1909	John Coffee	384.41	"	1/10 "	1/10 "
Seneca Falls, below lock No. 6	Nov. 16, 1909	" "	391.41	"	1/10 "	1/10 "
Seneca Falls, above lock No. 3	Aug. 16, 1909	Barge canal office employee	427.09	"	1/10 "	1/100 "
Waterloo, below lock No. 2	Aug. 11, 1909	Warren Van Riper	428.53	"	1/10 "	1/10 "
Waterloo, above lock No. 1	" " "	" " "	443.37	"	1/10 "	1/10 "
Geneva, below guard-lock	April 16, 1904	John Quail	445.83	"	1/10 "	1/10 "
Geneva, above guard-lock	May 14, 1904	" "	445.73	"	1/10 "	1/10 "
Onondaga outlet — Liverpool, Long Branch	April 16, 1904	Mark Kennedy	360.88	"	1/10 "	1/10 "
Onondaga lake — Syracuse	May 14, 1904	Chas. Bourke	369.15	Ref. point	....	1/10 "
Onondaga creek — Syracuse, Temple st. bridge	Jan. 1, 1908	L. W. Moulton	376.11	Chain	1/10 Foot	1/100 "
Clyde river.						
Clyde	Oct. 20, 1905	Barge canal employee	380.00	"	1/10 "	1/10 "
Lyons	Sept. 27, 1905	" " "	390.00	Staff	1/10 "	1/10 "
Ganargua creek.						
Newark	Nov. 29, 1905	Wm. J. Swartz	406.00	Chain	1/10 "	1/10 "
Palmyra	Mar. 25, 1907	C. H. Harrison	419.03	Staff	1/10 "	5/100 "
Canandaigua outlet — Alloway bridge, near Lyons	Sept. 18, 1906	Carl Tusher	403.32	"	1/10 "	1/10 "
Canandaigua lake — Canandaigua	Sept. 10, 1909	A. H. O'Reilly	*	"	1/10 "	1/10 "
Flint creek — Phelps	Aug. 5, 1910	Edw. Fitzgerald	*	Chain	1/10 "	5/100 "
Cayuga lake — Ithaca	Aug. 6, 1905	Wm. H. Grover	381.75	Staff	1/10 "	1/10 "

* Arbitrary datum.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River at Highway Bridge, Belgium, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	362.40	363.60	364.10	365.60	364.60	362.70	362.30	361.10	361.30	361.97	362.37	363.27
2.....	362.70	363.60	363.90	365.50	364.50	362.70	362.10	360.80	361.40	361.67	362.57	363.37
3.....	363.00	363.50	363.90	365.50	364.60	362.70	361.90	360.80	361.40	361.97	362.67	363.27
4.....	363.50	363.50	363.80	365.30	364.50	362.60	361.80	360.70	361.50	361.97	362.77	363.27
5.....	363.90	363.60	363.80	365.40	364.50	363.10	361.80	360.70	361.30	361.67	363.07	363.17
6.....	364.20	363.50	363.80	366.00	364.40	363.10	361.70	360.60	361.40	361.67	363.17	362.97
7.....	364.20	363.70	363.50	366.40	364.30	363.20	361.70	360.70	361.30	361.87	363.37	362.97
8.....	364.00	363.60	363.50	366.50	364.30	363.20	361.70	360.60	361.50	362.07	363.47	362.87
9.....	363.80	363.50	363.40	366.60	364.10	363.10	361.60	360.60	361.80	362.37	363.57	362.77
10.....	363.70	363.40	363.50	366.60	363.90	363.10	361.60	360.60	361.70	362.17	363.67	362.67
11.....	363.60	363.30	363.70	366.50	363.90	362.90	361.40	360.50	361.70	362.17	363.77	362.87
12.....	363.50	362.90	364.20	366.40	363.80	362.90	361.40	360.60	361.80	362.17	363.67	362.97
13.....	363.50	363.10	364.60	*a*	363.70	363.00	361.40	360.70	361.80	362.07	363.57	363.47
14.....	363.40	362.90	364.60	*a*	363.60	362.90	361.30	360.80	361.70	362.07	363.57	363.87
15.....	363.60	362.80	364.90	*a*	363.60	362.80	361.30	360.80	361.80	362.17	363.77	364.17
16.....	363.80	363.10	365.00	*a*	363.50	362.70	361.20	360.90	361.80	362.27	363.77	364.07
17.....	363.90	362.90	364.90	*a*	363.40	362.60	361.50	360.90	361.87	362.17	363.77	364.37
18.....	363.70	363.10	364.70	*a*	363.40	362.50	361.40	360.90	361.97	362.27	363.87	364.37
19.....	363.70	363.30	364.60	*a*	363.40	362.60	361.40	360.90	361.87	362.37	363.87	364.27
20.....	363.50	363.50	364.50	365.70	363.30	362.50	361.60	360.80	361.87	362.57	364.07	364.17
21.....	363.30	363.60	364.50	365.60	363.20	362.50	361.50	361.10	361.87	362.67	364.17	364.07
22.....	363.20	363.80	364.50	365.50	363.20	362.50	361.40	360.80	361.77	362.07	363.57	364.07
23.....	363.20	363.90	364.50	365.40	363.20	362.50	361.20	360.80	361.87	361.97	363.67	364.17
24.....	363.10	363.70	364.60	365.30	363.10	362.40	361.10	361.00	361.87	361.97	363.67	364.37
25.....	363.10	363.60	364.50	365.30	363.00	362.30	361.10	361.10	361.97	362.37	363.57	364.57
26.....	363.20	363.60	364.40	365.00	362.90	362.30	361.00	361.10	361.77	362.37	363.57	364.57
27.....	363.30	363.80	364.60	364.90	362.80	362.40	361.10	361.20	361.77	362.27	363.57	364.67
28.....	363.50	364.00	365.00	364.90	362.60	362.40	361.00	361.60	361.67	362.27	363.47	364.47
29.....	363.70	......	365.30	364.80	362.60	362.30	361.00	361.60	361.67	362.17	363.47	363.77
30.....	363.60	......	365.50	364.60	362.80	362.30	361.00	361.70	361.67	362.27	363.37	363.77
31.....	363.50	......	365.60	......	362.70	......	361.10	361.40	......	362.37	......	363.67

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River at Mud Lock, near Long Branch, Liverpool P. O., N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	362.97	363.97	363.77	366.27	364.87	363.47	361.87	361.47	361.57	362.07	363.07	363.37
2.....	363.17	363.87	363.97	366.07	364.87	363.57	361.87	361.47	361.67	362.07	363.07	363.37
3.....	363.87	363.87	363.97	365.87	364.77	363.67	362.07	361.47	361.67	362.07	363.07	363.37
4.....	364.07	363.87	363.87	365.87	364.67	363.87	362.17	361.47	361.67	362.07	362.97	363.37
5.....	364.07	363.87	363.97	365.87	364.67	364.07	362.17	361.57	361.67	362.07	363.07	363.37
6.....	364.07	363.87	363.97	366.37	364.57	364.07	362.07	361.57	361.67	362.17	363.17	363.47
7.....	364.27	363.87	363.87	366.77	364.47	363.87	362.07	361.67	361.77	362.17	363.37	363.57
8.....	364.27	363.77	363.87	367.17	364.27	363.77	361.87	361.67	361.87	362.27	363.37	363.57
9.....	364.07	363.77	363.87	366.87	364.27	363.57	361.57	361.67	361.87	362.27	363.47	363.47
10.....	363.87	363.57	364.07	366.87	364.27	363.37	361.47	361.67	361.77	362.27	363.67	363.47
11.....	363.57	363.47	364.17	366.77	363.07	363.07	361.47	361.57	361.77	362.27	373.77	363.47
12.....	363.67	363.47	364.47	366.67	363.87	362.97	361.77	361.57	361.77	362.17	363.87	363.57
13.....	363.77	363.57	364.87	366.47	363.77	362.77	361.77	361.57	361.77	362.17	363.87	363.77
14.....	363.77	363.57	365.07	366.37	363.77	362.67	361.57	361.57	361.87	362.17	363.97	363.97
15.....	363.77	363.67	365.37	366.37	363.77	362.67	361.47	361.47	361.97	362.17	364.07	364.37
16.....	363.77	363.67	365.47	366.27	363.47	362.67	361.47	361.47	361.97	362.37	364.07	364.37
17.....	363.67	363.77	365.47	366.17	363.27	362.47	361.47	361.47	362.07	362.37	364.07	364.47
18.....	363.47	363.87	365.47	365.87	363.27	362.37	361.47	361.47	361.97	362.37	363.97	364.47
19.....	363.47	363.87	365.27	365.77	363.27	362.37	361.47	361.47	361.97	362.37	364.07	364.47
20.....	363.47	363.97	365.17	365.77	363.47	361.57	361.57	361.47	361.87	362.37	364.37	364.57
21.....	363.47	364.07	364.87	365.67	363.37	362.47	361.57	361.47	361.87	362.37	364.37	364.57
22.....	363.37	364.07	364.77	365.57	363.27	362.47	361.47	361.67	361.97	362.47	364.27	364.37
23.....	363.37	363.97	364.67	365.47	363.27	362.67	361.47	361.67	362.07	362.57	364.17	364.47
24.....	363.37	363.97	364.87	365.47	363.37	362.67	361.47	361.67	362.07	362.57	363.87	364.67
25.....	363.37	363.87	364.97	365.37	363.37	362.57	361.47	361.57	362.07	362.57	363.67	364.67
26.....	363.37	363.77	365.07	365.37	363.37	362.37	361.47	361.57	362.07	362.67	363.57	364.67
27.....	363.57	363.77	365.17	365.17	363.27	362.27	361.47	361.57	362.07	362.77	363.57	364.57
28.....	363.97	363.67	365.67	365.07	363.17	362.27	361.47	361.47	361.97	362.97	363.47	364.57
29.....	364.07	......	365.77	364.97	363.17	362.17	361.47	361.47	361.97	363.07	363.37	364.47
30.....	364.17	......	366.27	364.97	363.27	362.07	361.47	361.47	362.07	363.07	363.37	364.37
31.....	364.17	......	366.27	......	363.37	......	361.47	361.47	......	363.07	......	*a*

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Onondaga Outlet, near Long Branch, Liverpool P. O., N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	363.48	364.48	364.58	366.08	364.88	362.88	362.78	361.78	361.78	362.28	362.68	363.48
2	363.78	364.28	364.48	366.18	364.98	362.88	362.78	361.68	361.88	362.28	362.68	363.48
3	364.18	364.08	364.48	366.28	364.98	362.88	362.68	361.68	361.88	362.28	362.78	363.48
4	364.68	363.98	365.38	366.48	364.88	362.88	362.58	361.68	361.88	362.28	362.78	363.48
5	364.68	363.98	365.38	366.68	364.78	362.88	362.48	361.68	361.88	362.28	362.88	363.48
6	364.68	363.88	364.28	366.88	364.68	362.88	362.38	361.58	361.88	362.18	362.98	363.48
7	364.68	363.88	364.18	367.18	364.58	362.98	362.28	361.58	361.88	362.18	363.08	363.48
8	364.58	363.78	364.08	367.18	364.48	363.08	362.18	361.58	361.98	362.18	363.28	363.38
9	364.38	363.78	363.98	367.18	364.38	363.18	362.08	361.48	362.08	362.18	363.48	363.38
10	364.18	363.68	364.08	367.18	364.28	363.28	362.08	361.48	362.18	362.18	363.58	363.38
11	364.08	363.68	364.28	367.08	364.18	363.28	361.98	361.48	362.28	362.18	363.58	363.38
12	364.08	363.68	364.48	366.98	364.08	363.18	361.98	361.48	362.28	362.18	363.58	363.38
13	363.98	363.58	364.88	366.78	363.88	363.18	361.88	361.38	362.28	362.28	363.68	363.38
14	363.98	363.58	365.18	366.68	363.78	363.08	361.88	361.38	362.28	362.28	363.68	363.48
15	363.98	363.48	365.48	366.58	363.78	362.98	361.78	361.38	362.18	362.38	363.78	363.68
16	363.88	363.48	365.58	366.58	363.68	362.88	361.78	361.38	362.18	362.38	363.78	363.88
17	363.88	363.38	365.48	366.48	363.68	362.88	361.78	361.38	362.18	362.48	363.88	364.18
18	363.88	363.58	365.28	366.38	363.58	362.88	361.88	361.38	362.18	362.48	363.98	364.58
19	363.78	363.78	365.28	366.28	363.58	362.88	361.98	361.38	362.18	362.58	364.08	364.68
20	363.78	363.88	365.18	366.08	363.48	362.88	362.08	361.38	362.18	362.58	364.18	364.68
21	363.78	363.98	365.08	365.98	363.48	362.78	362.08	361.38	362.18	362.58	364.18	364.78
22	363.68	364.08	365.08	365.88	363.38	362.78	362.08	361.38	362.18	362.58	364.18	364.78
23	363.68	364.18	365.08	365.78	363.38	362.68	361.98	361.38	362.18	362.48	364.08	364.78
24	363.68	364.18	365.08	365.68	363.28	362.68	361.98	361.48	362.18	362.48	363.98	364.78
25	363.78	364.08	365.08	365.58	363.18	362.68	361.88	361.58	362.18	362.48	363.88	364.78
26	363.88	364.18	365.08	365.38	363.08	362.68	361.88	361.58	362.18	362.48	363.78	364.78
27	363.98	364.38	365.18	365.28	362.98	362.78	361.88	361.58	362.18	362.58	363.68	364.68
28	364.08	364.58	365.28	365.18	362.98	362.78	361.78	361.68	362.28	362.58	363.58	364.58
29	364.28	......	365.48	365.08	362.98	362.78	361.78	361.68	362.28	362.58	363.48	364.48
30	364.38	......	365.68	364.98	362.88	362.78	361.78	361.78	362.28	362.68	363.48	364.38
31	364.48	......	365.88	......	362.88	......	361.78	361.78	......	362.68	......	364.28

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Onondaga Creek at Temple Street, Syracuse, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	382.94	*a*	379.67	380.78	379.59	378.98	378.86	378.79	*a*	*a*	379.09	379.11
2	383.39	379.71	379.96	*a*	380.61	378.87	*a*	378.89	*a*	378.96	379.09	379.03
3	*a*	379.31	379.81	380.45	380.21	378.96	378.62	*a*	*a*	378.95	379.09	*a*
4	*a*	379.71	379.73	380.56	379.61	*a*	*a*	378.69	*a*	378.92	379.06	378.79
5	380.14	380.26	*a*	381.66	379.61	379.16	378.54	378.64	*a*	378.60	*a*	378.85
6	380.37	379.43	379.66	384.68	379.61	379.46	378.46	*a*	*a*	378.82	379.03	378.91
7	380.15	379.56	379.17	382.94	*a*	379.09	378.48	379.21	*a*	378.76	379.11	378.90
8	379.94	379.50	379.15	382.31	379.36	379.00	378.52	378.71	*a*	*a*	379.01	378.83
9	380.17	379.61	379.60	*a*	379.19	378.91	*a*	378.56	*a*	379.45	379.01	379.10
10	379.88	*a*	380.06	381.21	379.21	378.81	378.37	378.53	*a*	379.17	379.89	*a*
11	379.70	379.51	380.17	381.09	379.31	*a*	378.46	378.81	*a*	378.88	379.27	379.06
12	380.71	379.31	*a*	380.87	379.19	378.84	378.41	378.53	*a*	378.89	*a*	379.01
13	380.03	*a*	381.08	380.51	379.19	379.31	378.36	*a*	*a*	378.97	*a*	380.06
14	380.14	379.43	381.15	380.51	*a*	378.81	378.38	378.41	*a*	379.01	379.19	380.26
15	380.78	379.41	381.36	380.93	379.14	378.86	378.38	378.97	*a*	*a*	379.08	379.91
16	379.78	379.04	381.07	*a*	379.19	378.86	*a*	378.61	*a*	378.89	379.00	380.18
17	379.61	379.41	379.91	380.53	379.16	378.86	379.51	378.67	*a*	378.63	379.01	*a*
18	379.68	381.09	380.26	380.33	379.13	*a*	379.22	378.93	*a*	*a*	379.04	379.90
19	379.61	380.73	*a*	380.22	379.21	378.80	379.06	378.61	*a*	379.26	*a*	379.49
20	379.45	380.06	380.04	380.09	379.32	378.71	378.88	*a*	*a*	379.00	379.59	379.37
21	379.66	379.79	380.49	379.87	*a*	378.66	379.01	378.96	379.01	378.97	379.46	379.19
22	379.74	379.67	380.46	379.93	379.01	378.67	379.11	378.61	378.89	*a*	379.26	379.37
23	379.04	379.63	381.79	*a*	379.03	378.94	*a*	378.55	379.06	379.02	379.16	380.31
24	379.20	379.67	380.59	380.16	379.07	378.54	*a*	378.29	*a*	379.13	379.20	*a*
25	379.36	379.59	379.93	379.93	379.24	*a*	378.37	378.81	379.05	379.12	379.66	*a*
26	379.06	*a*	*a*	379.66	379.01	378.77	379.76	378.97	379.08	379.99	*a*	379.61
27	379.82	380.93	381.86	379.70	379.01	379.11	378.38	*a*	379.19	379.15	379.48	379.79
28	381.41	380.11	385.21	379.66	*a*	379.23	378.47	378.71	378.73	378.79	379.21	379.99
29	380.02	......	382.18	379.61	378.76	379.37	378.46	379.19	379.46	*a*	379.41	379.09
30	379.73	......	381.21	*a*	378.77	378.96	*a*	379.11	379.23	379.36	379.26	379.21
31	379.68	......	381.06	......	378.79	......	378.73	*a*	......	379.49	......	*a*

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River below Dam at Baldwinsville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct	Nov.	Dec.
1911.												
1	364.20	365.80	365.65	367.05	365.60	364.25	363.95	363.55	363.60	363.20	363.80	363.95
2	364.30	365.30	365.65	366.95	365.65	364.25	363.65	363.30	363.65	363.50	363.85	363.95
3	364.95	365.15	365.65	366.85	365.55	364.25	363.80	363.35	363.20	363.45	363.80	363.65
4	365.35	364.95	365.55	366.75	365.45	364.35	363.70	363.35	363.35	363.50	363.80	363.70
5	365.45	364.95	365.45	366.80	365.40	364.55	363.77	363.20	363.25	363.50	363.60	363.75
6	365.45	364.95	365.20	367.35	365.35	364.55	363.75	362.75	363.20	363.50	363.85	363.70
7	365.40	364.95	364.95	367.70	365.25	364.55	363.65	363.35	363.10	363.55	364.00	363.60
8	365.20	364.90	364.87	367.85	365.25	364.55	363.63	363.40	363.27	363.47	363.95	363.60
9	365.05	364.85	364.87	367.85	365.25	364.40	363.45	363.50	363.25	363.70	364.00	363.45
10	365.00	364.75	365.05	367.85	365.10	364.20	363.65	363.60	363.20	363.62	364.03	363.35
11	364.75	364.60	365.55	367.85	365.05	364.15	363.70	363.50	363.45	363.63	364.05	363.55
12	364.80	364.55	365.83	367.70	365.05	364.15	363.70	363.50	363.70	363.60	363.90	363.55
13	364.90	364.65	366.20	367.55	364.95	364.15	363.65	363.15	363.45	363.60	364.00	363.80
14	365.05	364.65	366.40	367.45	364.85	364.15	363.60	363.55	363.50	363.60	364.00	364.10
15	364.95	364.65	366.35	367.35	364.85	364.15	363.60	363.45	363.40	363.40	364.05	364.45
16	365.05	364.60	366.40	367.15	364.05	364.10	363.25	363.50	363.45	363.60	364.03	364.60
17	365.05	364.65	366.45	367.15	364.70	364.05	363.45	363.50	363.27	363.65	364.00	364.85
18	365.05	364.85	366.15	367.05	364.65	364.10	363.65	363.45	363.60	363.73	364.15	364.95
19	364.95	364.95	366.10	366.80	364.55	364.05	363.67	363.35	363.65	363.75	364.15	364.85
20	364.95	364.95	366.10	366.65	364.55	364.05	363.67	363.10	363.50	363.75	364.35	364.75
21	364.95	365.10	365.95	366.55	364.55	364.05	363.70	363.05	363.37	363.75	364.45	364.65
22	364.85	365.15	365.95	366.40	364.55	363.95	363.70	363.03	363.53	363.65	364.30	364.55
23	364.85	365.15	366.00	366.25	364.70	363.95	363.30	363.05	363.50	363.80	364.20	364.85
24	364.75	365.10	365.95	366.25	364.35	363.87	363.65	363.10	363.23	363.75	364.15	364.80
25	364.75	365.05	365.95	366.15	364.05	363.75	363.65	363.15	363.53	363.75	364.10	364.95
26	364.75	365.05	365.90	366.15	364.10	363.75	363.65	363.40	363.53	363.75	364.00	365.00
27	364.80	365.20	366.05	366.10	364.15	363.95	363.65	363.25	363.50	363.75	364.03	365.10
28	364.90	365.60	366.43	365.90	364.20	363.15	363.65	363.50	363.40	363.75	364.10	365.05
29	365.00	......	366.70	365.85	364.20	364.00	363.55	363.70	363.60	363.35	364.10	364.45
30	365.30	......	366.90	365.75	364.15	363.90	363.25	363.60	363.50	363.70	363.95	364.35
31	366.00	......	367.05	......	364.15	......	363.40	363.35	......	363.80	......	364.35

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River above Dam at Baldwinsville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1	370.75	374.08	374.58	373.48	374.25	375.05	374.32	373.80	373.17	374.12	374.59	374.82
2	371.00	374.05	375.12	373.30	374.18	375.15	374.25	373.70	373.12	374.25	374.59	374.82
3	370.35	374.05	375.52	373.32	374.20	375.10	374.48	373.42	373.37	374.19	374.62	374.87
4	370.00	374.08	375.88	372.90	374.22	375.10	374.45	373.50	373.62	374.22	374.57	374.97
5	369.80	374.10	376.22	372.75	374.38	375.10	374.32	373.52	373.75	374.22	374.52	374.92
6	369.65	374.40	376.45	372.38	374.38	375.22	374.30	373.51	374.05	374.29	374.65	374.82
7	369.55	374.00	376.75	372.55	374.38	375.25	374.28	373.59	374.22	374.29	374.59	374.69
8	369.70	373.70	376.80	372.40	374.48	375.20	374.25	373.47	374.32	374.37	374.52	374.55
9	369.75	373.82	376.70	372.60	374.38	375.20	374.28	373.39	374.52	374.47	374.52	374.49
10	369.55	373.95	376.25	373.55	374.30	375.20	374.38	373.37	374.52	374.45	374.52	374.47
11	369.45	373.95	376.10	373.30	374.60	375.20	374.30	373.55	374.57	374.37	374.62	374.37
12	369.50	373.95	376.05	373.20	375.25	375.18	374.20	373.59	374.47	374.32	374.62	374.27
13	369.50	374.20	376.02	373.15	375.18	375.10	374.20	373.65	374.47	374.32	374.75	374.22
14	369.45	373.85	375.95	372.65	375.20	375.02	374.20	373.82	374.37	374.32	374.72	374.12
15	369.45	373.40	375.68	372.50	375.28	374.90	374.20	373.82	374.32	374.29	374.62	374.27
16	369.85	373.40	375.60	372.42	375.30	374.92	374.20	373.62	374.17	374.42	374.69	374.22
17	369.65	373.45	375.32	372.78	375.28	374.90	374.32	373.57	374.15	374.32	374.65	374.19
18	369.55	373.40	375.18	372.62	375.25	374.85	374.18	373.47	374.22	374.27	374.65	373.95
19	369.80	373.40	375.05	372.52	375.25	374.88	374.00	373.55	374.15	374.25	374.65	373.82
20	370.20	373.75	375.45	372.55	375.18	374.85	374.08	373.52	374.07	374.17	374.79	373.97
21	370.42	373.35	374.78	372.70	375.15	374.75	374.05	373.57	374.07	374.32	374.82	374.07
22	371.15	373.45	374.65	372.80	375.10	374.68	374.00	373.52	373.97	374.32	374.82	374.15
23	372.60	373.62	374.55	372.75	375.10	374.62	374.05	373.52	373.87	374.55	374.82	374.29
24	373.28	373.32	374.50	373.18	375.10	374.62	374.18	373.52	373.97	374.47	374.92	374.37
25	374.10	373.25	374.48	372.90	375.22	374.60	374.05	373.57	374.12	374.52	374.85	374.42
26	374.38	373.35	374.45	373.55	375.30	374.65	374.00	373.72	374.07	374.52	374.82	374.52
27	374.52	373.80	374.42	374.18	375.30	374.55	373.90	373.62	374.07	374.52	374.87	374.42
28	374.58	374.10	374.28	374.15	375.28	374.52	374.08	373.67	374.12	374.55	374.77	374.42
29	374.50	......	374.05	374.20	375.28	374.42	373.92	373.67	374.12	374.55	374.77	374.47
30	374.40	......	373.95	374.30	375.18	374.48	373.90	373.42	374.12	374.62	374.75	374.59
31	374.20	......	373.72	......	375.08	......	373.90	373.17	......	374.59	......	374.65

NOTE.— This table supersedes that published on page 391 of the State Engineer's report for 1910.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River above Dam at Baldwinsville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	374.82	375.30	375.67	375.97	375.07	374.87	374.42	373.32	373.85	373.92	374.19	374.35
2	374.92	375.27	375.75	375.92	374.95	374.87	374.47	373.15	373.80	373.97	374.15	374.32
3	375.27	375.17	375.77	375.82	374.92	374.95	374.42	372.35	373.90	373.97	374.09	374.29
4	375.37	375.12	375.80	375.72	374.92	374.97	374.50	373.02	373.87	374.22	374.12	374.07
5	375.37	375.27	375.77	375.80	374.92	374.97	374.35	373.12	373.85	374.22	374.25	373.87
6	375.52	375.07	375.65	376.05	374.90	375.02	374.27	373.35	373.77	374.15	374.17	373.77
7	375.30	374.82	375.55	376.12	374.97	375.05	374.22	373.27	373.69	374.15	374.25	373.59
8	375.27	374.92	375.45	376.07	374.87	375.02	374.12	373.27	373.77	374.27	374.22	373.42
9	375.22	375.02	375.45	376.15	374.77	374.92	374.20	373.12	373.84	374.25	374.19	373.47
10	375.07	375.05	375.55	376.12	374.70	374.77	374.22	372.82	374.10	374.20	374.32	373.62
11	375.10	375.10	375.72	376.07	374.62	374.82	374.27	372.52	374.07	374.20	374.39	373.52
12	375.15	375.32	375.95	376.02	374.45	374.72	374.17	372.52	374.15	374.22	374.49	373.59
13	375.22	375.20	376.07	375.95	374.52	374.65	374.07	372.72	374.05	374.10	374.47	373.92
14	375.35	375.22	376.10	375.90	374.60	374.65	373.92	372.62	374.02	374.15	374.42	374.27
15	375.37	375.12	376.02	375.82	374.55	374.62	373.87	372.62	374.07	374.29	374.29	374.52
16	375.15	375.10	376.02	375.87	374.42	374.62	373.92	372.67	374.00	374.22	374.25	374.75
17	375.15	375.07	375.95	375.72	374.42	374.62	373.87	372.67	374.12	374.17	374.17	375.02
18	375.17	375.22	375.85	375.60	374.42	374.62	374.15	372.72	374.12	374.22	374.27	374.85
19	375.22	375.45	375.87	375.50	374.37	374.62	374.05	372.80	374.02	374.29	374.62	374.82
20	375.22	375.55	375.82	375.42	374.37	374.60	374.07	373.00	373.92	374.27	374.57	374.85
21	375.30	375.57	375.80	375.35	374.52	374.57	374.05	373.22	373.87	374.27	374.57	374.72
22	375.32	375.55	375.77	375.29	374.45	374.55	374.05	373.42	373.82	374.42	374.47	374.72
23	375.22	375.55	375.85	375.37	374.35	374.52	374.10	373.77	373.82	374.40	374.39	374.89
24	375.20	375.55	375.80	375.27	374.20	374.47	374.00	373.92	374.05	374.30	374.42	374.97
25	375.20	375.47	375.75	375.25	374.60	374.57	373.95	373.00	374.07	374.25	374.42	374.97
26	375.22	375.50	375.80	375.20	374.70	374.45	373.82	374.10	374.00	374.20	374.55	374.92
27	375.22	375.60	375.82	375.22	374.77	374.50	373.67	374.17	373.92	374.25	374.49	375.07
28	375.42	375.67	375.00	375.12	374.87	374.72	373.47	374.12	373.90	374.22	374.42	375.07
29	375.52	......	376.07	375.12	374.82	374.57	373.37	373.97	373.82	374.40	374.42	374.67
30	375.75	......	376.07	375.17	374.87	374.42	373.50	373.80	373.77	374.37	374.37	374.65
31	375.35	......	375.97	......	374.80	......	373.47	373.87	......	374.22	......	374.75

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River at Foot of Jack's Reef, Memphis, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	375.02	376.02	376.52	377.12	375.72	375.02	374.82	374.62	374.02	374.02	374.52	374.52
2	375.12	375.92	376.52	377.02	375.72	375.02	374.72	374.72	374.02	374.12	374.52	374.42
3	375.82	375.92	376.62	376.92	375.72	375.02	374.62	374.82	374.02	374.12	374.52	374.32
4	376.12	375.82	376.52	376.92	375.62	375.02	374.52	374.72	374.12	374.02	374.42	374.32
5	376.22	375.82	376.52	377.02	375.62	375.12	374.42	374.72	374.22	374.12	374.52	374.22
6	376.22	375.82	376.52	377.32	375.52	375.32	374.32	374.72	374.32	374.12	374.52	374.12
7	376.02	375.72	376.42	377.42	375.52	375.32	374.32	374.52	374.32	374.22	374.52	374.02
8	375.82	375.72	376.32	377.52	375.52	375.22	374.22	374.62	374.22	374.32	374.52	374.12
9	375.72	375.62	376.12	377.52	375.42	375.22	374.32	374.62	374.12	374.32	374.52	374.22
10	375.52	375.62	376.12	377.52	375.22	374.92	374.42	374.92	374.12	374.22	374.52	374.32
11	375.52	375.62	376.32	377.52	375.22	375.02	374.42	375.02	374.02	374.22	374.52	374.22
12	375.52	375.72	376.62	377.42	375.22	374.92	374.32	375.22	374.12	374.12	374.62	374.02
13	375.62	375.72	376.92	377.22	375.12	374.82	374.22	375.32	374.22	374.12	374.62	374.22
14	375.62	375.82	377.02	377.12	375.12	374.82	374.12	375.42	374.22	374.12	374.52	374.42
15	375.92	375.72	377.02	377.02	375.02	374.92	374.12	375.32	374.02	374.12	374.52	374.72
16	375.92	375.72	376.82	377.02	375.02	374.82	374.12	375.22	374.02	374.12	374.42	375.02
17	375.82	375.72	376.72	376.82	374.92	374.72	374.12	375.22	374.22	374.22	374.32	375.22
18	375.72	375.82	376.62	376.72	374.82	374.82	374.22	375.12	374.22	374.32	374.42	375.22
19	375.72	376.02	376.62	376.52	374.82	374.82	374.22	375.02	374.22	374.32	374.52	375.12
20	375.72	376.02	376.52	376.42	374.82	374.82	374.22	375.02	374.12	374.32	374.82	375.02
21	375.72	376.12	376.42	376.32	374.72	374.82	374.22	374.92	374.12	374.32	374.72	375.02
22	375.72	376.32	376.62	376.22	374.72	374.72	374.22	374.62	374.02	374.42	374.72	375.02
23	375.72	376.32	376.72	376.22	374.62	374.72	374.12	374.32	374.12	374.52	374.72	375.02
24	375.72	376.32	376.62	376.22	374.42	374.72	374.12	374.22	374.02	374.52	374.62	375.22
25	375.72	376.32	376.52	376.12	374.22	374.62	374.12	374.02	374.12	374.52	374.52	375.22
26	375.72	376.42	376.52	376.12	374.42	374.62	374.12	374.02	374.12	374.52	374.62	375.22
27	375.82	376.42	376.62	376.02	374.92	374.72	374.22	374.12	374.12	374.42	374.62	375.22
28	375.82	376.42	376.82	375.92	374.92	374.82	374.42	374.12	374.02	374.42	374.62	375.22
29	376.02	......	377.02	375.92	375.02	374.82	374.52	374.12	374.12	374.52	374.52	375.12
30	376.22	......	377.22	375.82	374.92	374.82	374.52	374.12	374.12	374.52	374.52	375.02
31	376.22	......	377.22	......	374.92	......	374.52	374.02	......	374.52	......	375.02

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River at Cross Lake, Jordan N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	374.99	375.99	376.59	377.49	375.89	374.99	374.59	373.39	373.89	374.09	374.39	374.49
2......	375.14	375.99	376.59	377.39	375.89	375.09	374.59	373.29	373.89	374.09	374.39	374.39
3......	375.89	375.89	376.69	377.24	375.79	375.09	374.59	373.29	373.89	374.09	374.39	374.29
4......	376.19	375.89	376.69	377.09	375.79	375.19	374.59	373.19	373.79	374.09	374.49	374.19
5......	376.14	375.89	376.59	377.24	375.59	375.19	374.59	373.19	373.79	374.09	374.59	374.04
6......	376.09	375.79	376.49	377.64	375.59	375.29	373.68	373.19	373.79	374.19	374.59	373.84
7......	376.04	375.69	376.34	377.89	375.59	375.29	373.68	373.19	373.79	374.19	374.59	373.69
8......	375.89	375.69	376.19	377.89	375.49	375.19	373.67	373.09	373.84	374.29	374.59	373.59
9......	375.89	375.59	376.09	377.99	375.39	375.19	373.67	373.09	373.99	374.29	374.49	373.69
10......	374.79	375.59	376.24	377.94	375.29	375.09	373.67	373.04	373.99	374.19	374.49	373.59
11......	374.69	375.69	376.54	377.89	375.19	375.09	373.66	372.79	374.09	374.19	374.49	373.69
12......	374.69	375.69	376.94	377.74	375.19	374.99	373.66	372.79	374.19	374.19	374.59	373.84
13......	374.84	375.79	377.19	377.59	375.19	374.89	373.65	372.79	374.19	374.09	374.59	374.04
14......	374.99	375.79	377.29	377.44	375.09	374.89	373.64	372.69	374.19	374.09	374.49	374.34
15......	375.09	375.69	377.39	377.29	375.09	374.89	373.63	372.69	374.19	374.19	374.39	374.74
16......	375.09	375.69	377.24	377.19	375.09	374.79	373.62	372.69	374.19	374.19	374.39	375.04
17......	375.09	375.69	377.09	377.04	374.99	374.79	373.63	372.79	374.29	374.29	374.39	375.14
18......	374.99	375.84	377.04	376.89	374.99	374.79	373.63	372.79	374.29	374.29	374.49	375.19
19......	374.99	376.04	376.89	376.74	374.89	374.79	373.64	372.79	374.19	374.29	374.64	375.09
20......	374.99	376.34	376.79	376.59	374.89	374.79	373.65	372.89	374.09	374.29	374.69	375.09
21......	374.89	376.39	376.79	376.49	374.79	374.69	373.65	373.04	373.99	374.29	374.69	375.09
22......	374.89	376.39	376.79	376.39	374.69	374.69	373.64	373.34	373.99	374.39	374.69	374.99
23......	374.89	376.39	376.89	376.39	374.59	374.69	373.64	373.69	373.89	374.39	374.59	375.09
24......	374.79	376.39	376.79	376.39	373.68	374.69	373.63	373.79	373.99	374.29	374.59	375.19
25......	374.79	376.34	376.79	376.39	374.59	374.69	373.62	373.94	374.09	374.29	374.59	375.29
26......	374.79	376.29	376.79	376.29	374.69	374.69	373.61	374.09	374.09	374.29	374.59	375.29
27......	374.84	376.39	376.84	376.24	374.79	374.69	373.60	374.93	373.99	374.29	374.49	375.29
28......	375.14	376.49	377.14	376.09	374.89	374.69	373.60	374.09	373.99	374.39	374.49	375.19
29......	376.09	......	377.39	375.99	374.89	374.59	373.60	374.09	373.89	374.49	374.49	375.09
30......	376.19	......	377.59	375.99	374.89	374.59	373.49	373.99	373.99	374.49	374.49	374.94
31......	376.09	......	377.59	......	374.89	......	373.39	373.89	......	374.49	......	374.99

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River at Mosquito Point Bridge, Port Byron, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	376.10	378.20	378.60	379.40	377.60	376.20	375.90	374.70	374.40	374.70	375.20	374.90
2......	376.40	378.30	378.70	379.20	377.50	376.30	375.80	374.70	374.40	374.70	375.20	374.80
3......	377.60	378.30	378.60	379.10	377.50	376.30	375.80	374.70	374.30	374.70	375.10	374.70
4......	377.80	378.40	378.40	379.10	377.40	376.30	375.80	374.80	374.30	374.80	375.10	374.50
5......	377.90	378.40	377.90	379.20	377.40	376.40	375.70	374.90	374.20	374.80	375.10	374.40
6......	377.80	378.40	377.90	379.60	377.30	376.50	375.70	374.80	374.20	374.80	375.20	374.30
7......	377.70	378.30	377.90	379.80	377.30	376.50	375.60	374.70	374.20	374.90	375.30	374.20
8......	377.40	378.30	377.70	380.00	377.20	376.40	375.50	374.70	374.40	374.90	375.30	374.10
9......	377.20	378.20	377.60	380.10	376.00	376.30	375.50	374.60	374.60	374.90	375.30	374.00
10......	377.00	378.20	377.80	380.10	376.90	376.20	375.60	374.60	374.70	374.90	375.30	374.10
11......	377.10	378.20	378.20	379.90	376.80	376.30	375.60	374.70	374.80	374.80	375.20	374.20
12......	377.20	378.10	378.80	379.80	376.70	376.30	375.50	374.70	374.90	374.80	375.20	374.40
13......	377.30	378.10	379.00	379.60	376.60	376.40	375.50	374.60	374.90	374.80	375.20	375.10
14......	377.40	378.00	379.30	379.50	376.60	376.40	375.40	374.60	374.80	374.70	375.10	375.10
15......	377.80	377.90	379.40	379.30	376.50	376.30	375.30	374.50	374.70	374.90	375.00	375.45
16......	377.60	377.80	379.10	379.10	376.50	376.30	375.30	374.50	374.80	374.90	374.90	375.75
17......	377.50	377.80	378.90	378.90	376.40	376.20	375.50	374.50	374.80	375.10	374.90	375.95
18......	377.40	377.90	378.80	378.70	376.40	376.20	375.60	374.50	374.70	375.10	374.90	375.95
19......	377.40	378.10	378.60	378.50	376.30	376.20	375.60	374.50	374.70	375.00	375.10	375.85
20......	377.30	378.50	378.50	378.40	376.30	376.30	375.60	374.60	374.70	375.00	375.30	375.75
21......	377.30	378.50	378.40	378.20	376.30	376.20	375.50	374.60	374.60	375.10	375.30	375.65
22......	377.30	378.50	378.40	378.10	376.20	376.10	375.40	374.70	374.60	375.10	375.20	375.65
23......	377.30	378.40	378.50	378.10	376.10	376.10	375.30	374.70	374.60	375.10	375.10	375.85
24......	377.30	378.40	378.40	378.20	376.10	376.10	375.20	374.70	374.60	375.00	375.10	375.95
25......	377.20	378.40	378.30	378.20	376.00	376.00	375.20	374.80	374.50	375.00	375.10	376.05
26......	377.20	378.30	378.40	378.10	376.00	376.00	375.10	374.70	374.50	375.00	375.10	376.15
27......	377.40	378.40	378.60	377.90	376.00	376.10	375.00	374.50	374.50	375.00	375.10	376.15
28......	377.70	378.40	379.20	377.80	376.00	376.30	374.90	374.60	374.60	375.10	375.00	375.95
29......	377.90	......	379.40	377.70	376.00	376.20	374.90	374.60	374.60	375.10	375.00	375.75
30......	378.00	......	379.60	377.60	375.90	376.10	374.80	374.50	374.60	375.10	375.00	375.65
31......	378.20	......	379.60	......	375.90	......	374.70	374.50	......	375.10	......	375.75

Mean Daily Elevation af Water-surface (Barge Canal Datum) af Seneca River at N. Y. C. R. R. Bridge, near Fox Ridge, Savannah P. O., N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	378.20	380.50	381.00	381.30	380.00	378.80	378.00	377.50	378.30	378.50	378.30	377.83
2......	378.50	380.50	381.00	381.20	380.10	378.80	378.10	377.50	378.30	378.70	378.40	377.63
3......	379.70	380.60	380.80	381.00	380.00	378.80	378.10	377.50	378.20	378.70	378.50	377.33
4......	380.10	380.60	380.60	380.90	380.00	378.80	378.00	377.50	378.20	378.60	378.40	377.33
5......	380.00	380.60	380.30	381.10	379.90	378.80	378.00	377.50	378.10	378.50	378.03	377.43
6......	379.90	380.50	380.20	381.50	379.90	378.90	377.90	377.50	378.40	378.30	378.13	377.53
7......	379.70	380.50	380.00	381.80	379.80	378.90	377.90	377.50	378.30	378.40	378.33	377.53
8......	379.60	380.50	379.70	382.00	379.80	378.90	377.90	377.50	378.40	378.40	378.33	377.53
9......	379.50	380.60	379.70	381.90	379.70	378.80	377.90	377.60	378.50	378.50	378.33	377.53
10......	379.40	380.60	379.90	381.80	379.60	378.80	377.90	377.60	378.60	378.50	378.43	377.73
11......	379.30	380.50	380.50	381.70	379.60	378.80	377.90	377.60	378.60	378.50	378.43	377.83
12......	379.40	380.40	381.10	381.60	379.50	378.80	377.90	377.80	378.60	378.50	378.43	377.93
13......	379.70	380.20	381.30	381.50	379.40	378.80	377.80	377.80	378.50	378.50	378.33	378.03
14......	379.90	380.00	381.40	381.40	379.40	378.80	377.80	377.70	378.50	378.50	378.23	378.43
15......	380.00	379.80	381.60	381.20	379.40	378.80	377.80	377.60	378.70	378.40	378.23	378.53
16......	379.90	379.70	381.40	381.00	379.30	378.70	377.80	377.70	378.60	378.50	378.13	378.53
17......	379.90	379.80	381.00	380.90	379.30	378.70	377.90	377.80	378.60	378.60	378.13	378.53
18......	379.80	379.90	381.00	380.80	379.20	378.70	378.00	378.00	378.50	378.80	378.03	378.43
19......	379.70	380.60	380.90	380.70	379.20	378.70	378.10	378.00	378.50	378.70	378.13	378.43
20......	379.60	380.80	380.70	380.60	379.20	378.70	378.00	378.00	378.50	378.70	378.03	378.43
21......	379.60	381.00	380.50	380.50	379.10	378.60	378.00	378.00	378.50	378.70	378.03	378.23
22......	379.60	381.00	380.60	380.40	379.00	378.60	377.90	378.00	378.50	378.70	378.03	378.13
23......	379.60	380.90	380.60	380.40	379.00	378.50	377.90	378.10	378.50	378.60	378.03	378.23
24......	379.50	380.70	380.60	380.40	378.90	378.50	377.80	378.10	378.50	378.60	378.03	378.33
25......	379.50	380.50	380.50	380.50	378.90	378.40	377.80	378.10	378.50	378.60	377.93	378.43
26......	379.60	380.30	380.50	380.40	378.90	378.30	377.70	378.20	378.40	378.60	377.93	378.53
27......	379.80	380.50	380.70	380.30	378.90	378.40	377.60	378.20	378.50	378.60	377.93	378.63
28......	380.00	380.70	381.10	380.20	378.80	378.50	377.50	378.20	378.50	378.60	378.33	378.53
29......	380.30	......	381.40	380.10	378.70	378.20	377.50	378.40	378.60	378.60	378.23	377.63
30......	380.40	......	381.50	380.00	378.60	378.10	377.40	378.40	378.50	378.60	378.13	377.83
31......	380.40	......	381.40	......	378.60	......	377.40	378.30	......	378.70	......	377.83

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River at foot of Cayuga Lake.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	381.17	382.32	382.87	383.72	383.37	381.92	381.92	381.82	381.67	381.72	381.52	381.67
2......	381.42	382.32	382.82	*a*	383.22	381.97	381.87	381.87	381.77	381.62	381.47	381.62
3......	381.52	382.42	382.82	383.72	383.22	381.92	381.82	381.87	381.67	381.72	381.52	381.52
4......	382.02	382.62	382.82	383.92	383.27	381.87	381.77	381.82	381.72	381.92	381.52	381.57
5......	382.02	382.67	382.82	383.92	383.27	382.17	381.82	381.72	381.92	381.57	381.57	381.67
6......	381.92	382.67	382.72	383.92	383.17	382.02	381.82	381.72	381.72	381.62	381.67	381.67
7......	381.92	382.77	382.77	383.92	383.12	381.92	381.67	381.72	381.72	381.62	381.57	381.72
8......	381.92	382.72	382.72	384.02	383.02	381.92	381.87	381.87	381.77	381.72	381.57	381.67
9......	381.92	382.67	382.72	*a*	382.92	381.87	381.92	381.62	381.87	381.72	381.52	381.67
10......	382.02	382.57	382.67	384.12	382.92	381.87	381.82	381.67	381.92	381.72	381.67	381.72
11......	381.92	382.42	382.82	384.12	382.87	381.82	381.72	381.67	381.92	381.72	381.67	381.72
12......	381.92	382.32	382.07	384.22	382.82	382.02	381.67	381.62	381.87	381.67	381.87	381.72
13......	381.92	382.27	382.12	384.32	382.72	382.07	381.72	381.52	381.77	381.62	381.62	381.72
14......	382.02	382.27	382.27	384.12	382.72	382.02	381.72	381.62	381.82	381.67	381.87	381.87
15......	382.22	382.27	382.22	384.02	382.67	382.02	381.97	381.62	381.97	381.77	381.52	381.82
16......	382.32	382.32	382.22	*a*	382.62	381.92	381.62	381.62	381.87	381.72	381.52	381.92
17......	382.32	382.22	382.22	383.82	382.62	381.02	381.77	381.62	381.82	381.97	381.57	381.97
18......	382.32	382.22	382.37	383.77	382.62	381.97	381.72	381.62	381.87	381.72	381.72	381.92
19......	382.32	382.32	383.62	383.62	382.42	381.97	381.82	381.62	381.87	381.72	381.62	381.97
20......	382.22	382.54	383.32	383.47	382.42	381.82	381.77	381.62	381.77	381.72	381.62	382.07
21......	382.22	382.67	383.12	383.67	382.42	381.82	381.72	381.62	381.92	381.87	381.52	382.07
22......	382.02	382.62	383.22	383.57	382.37	381.92	381.67	381.72	381.77	381.87	381.52	382.17
23......	382.02	382.67	383.17	383.57	382.27	381.82	381.67	381.57	381.77	381.82	381.77	382.17
24......	382.12	382.62	383.22	383.62	382.17	381.92	381.97	381.57	381.87	381.72	381.62	382.12
25......	382.02	382.57	383.27	383.57	382.12	381.97	381.82	381.62	381.77	381.87	381.57	382.22
26......	382.02	382.57	383.27	383.57	382.12	381.92	381.72	381.57	381.62	381.72	381.67	382.12
27......	382.02	382.52	383.37	383.47	382.12	381.92	381.72	381.62	381.97	381.57	381.57	382.27
28......	382.32	382.77	383.77	383.42	382.12	381.92	381.72	381.72	381.67	381.72	381.62	382.32
29......	382.32	......	383.82	383.37	382.02	381.87	381.67	381.72	382.02	381.77	381.52	382.27
30......	382.32	......	383.77	383.37	381.92	381.87	381.72	381.72	381.62	381.62	381.67	382.12
31......	382.32	......	383.72	......	382.12	......	381.72	381.67	......	381.77	......	382.27

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River above Mud Lock, near Seneca Falls, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	386.53	386.68	386.73	386.73	386.48	385.81	386.31	385.83	385.81	386.21	386.63	386.55
2......	386.68	386.68	386.73	*a*	386.68	385.95	386.13	385.73	385.83	386.41	386.68	386.55
3......	386.68	386.68	386.73	386.68	386.55	386.11	386.08	385.71	385.75	386.25	386.71	386.43
4......	386.68	386.68	386.63	386.63	386.48	385.83	385.93	385.73	385.78	386.43	386.68	386.51
5......	386.68	386.43	386.51	386.93	386.45	386.11	386.11	385.71	385.85	386.38	386.55	386.55
6......	386.63	386.38	386.73	386.73	386.45	386.21	386.21	385.46	385.88	386.35	386.63	386.55
7......	386.63	386.68	386.71	386.88	386.35	386.23	386.23	385.66	385.83	386.43	386.65	386.35
8......	386.55	386.68	386.71	386.73	386.41	386.21	386.03	385.73	385.98	386.55	386.63	386.51
9......	386.68	386.61	386.68	*a*	386.38	386.18	385.81	385.53	385.95	386.53	386.53	386.55
10......	386.53	386.68	386.73	386.73	386.38	386.15	386.11	385.58	385.93	386.68	386.65	386.35
11......	386.68	386.63	386.63	386.73	386.33	385.88	386.25	385.63	385.98	386.71	385.71	386.53
12......	386.68	386.48	386.73	386.63	386.35	386.13	386.21	385.61	386.11	386.68	386.68	386.35
13......	386.68	386.68	386.55	386.73	386.29	386.25	386.18	385.53	385.81	386.71	386.65	386.61
14......	386.68	386.68	386.61	386.73	386.08	385.95	386.18	385.48	385.98	386.63	386.61	386.55
15......	386.48	386.68	386.73	386.73	386.28	386.38	386.18	385.58	*a*	386.65	386.65	386.53
16......	386.68	386.68	386.73	*a*	386.28	386.33	385.81	385.53	*a*	386.71	386.65	386.53
17......	386.68	386.68	386.63	386.73	386.23	386.31	385.83	385.66	*a*	386.63	386.61	386.45
18......	386.68	386.68	386.53	386.73	386.21	386.11	386.05	385.51	*a*	386.73	386.68	386.48
19......	386.68	386.68	386.41	386.73	386.21	386.48	386.15	385.63	*a*	386.68	386.61	386.38
20......	386.68	386.68	386.55	386.65	386.05	386.51	386.33	385.56	*a*	386.61	386.48	386.38
21......	386.68	386.73	386.53	386.58	385.81	386.48	386.11	385.61	*a*	386.61	386.61	386.35
22......	386.45	386.73	386.41	386.71	385.95	386.45	386.08	385.71	*a*	386.51	386.58	386.35
23......	386.68	386.73	386.58	386.68	385.88	386.41	385.85	385.75	*a*	386.63	386.65	386.51
24......	386.68	386.73	386.65	386.65	386.55	386.41	386.13	385.71	*a*	386.65	386.65	386.38
25......	386.68	386.73	386.53	386.68	386.25	386.13	386.13	385.73	386.33	386.56	386.65	386.25
26......	386.68	386.73	386.38	386.65	386.28	386.45	386.08	385.75	386.28	386.58	386.53	386.25
27......	386.68	386.73	386.65	386.63	386.13	386.45	386.05	385.73	386.25	386.55	386.55	386.45
28......	386.68	386.73	386.63	386.55	386.01	386.38	386.01	385.78	386.31	386.53	386.65	386.53
29......	386.51	......	386.63	386.51	386.15	386.35	385.93	385.81	386.38	386.33	386.65	386.45
30......	386.68	......	386.63	386.45	385.93	386.43	385.85	385.75	386.33	386.51	386.63	386.33
31......	386.63	......	386.68	......	385.98	......	385.83	385.81	......	386.43	......	386.21

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River below Lock No. 7, a Seneca Falls, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	386.56	386.91	386.96	386.81	386.76	386.31	386.86	*a*	387.51	387.21	387.31	387.21
2......	387.21	387.01	386.91	386.61	386.86	386.51	386.46	*a*	387.41	387.51	387.41	387.01
3......	387.11	387.01	386.91	386.76	386.81	386.61	386.76	*a*	387.31	387.31	387.31	387.01
4......	387.06	387.01	386.81	386.81	386.81	386.16	386.51	387.16	387.31	387.41	387.31	387.06
5......	387.21	386.61	386.56	387.36	386.71	386.56	386.86	387.16	387.41	387.31	387.21	386.96
6......	386.91	386.71	386.91	386.96	386.66	386.66	386.86	387.11	387.31	387.41	387.31	386.96
7......	387.06	386.86	386.91	387.11	386.61	386.76	386.96	387.26	387.16	387.31	387.21	386.96
8......	386.81	386.86	386.81	386.91	386.61	386.66	386.86	387.16	387.41	387.31	387.41	387.01
9......	387.06	386.91	386.86	386.91	386.56	386.66	386.46	387.36	387.31	387.31	387.21	386.86
10......	386.61	386.76	387.26	386.96	386.66	386.71	386.81	387.31	387.31	387.31	387.31	386.96
11......	387.11	386.61	386.26	387.01	386.61	386.11	386.91	387.16	387.31	387.41	387.21	386.96
12......	387.16	386.51	386.91	386.96	386.56	386.61	387.01	387.16	387.41	387.31	387.21	387.01
13......	387.26	386.91	386.91	386.96	386.56	386.61	386.91	387.16	387.31	387.41	387.11	387.01
14......	387.26	386.91	386.86	386.96	386.21	386.41	387.01	387.06	387.31	387.31	387.21	386.91
15......	386.56	386.96	386.91	386.96	386.56	386.66	386.96	387.16	387.41	387.21	387.41	387.01
16......	386.91	387.06	386.46	386.91	386.51	386.76	386.61	387.26	387.31	387.31	387.31	387.01
17......	387.11	387.11	386.86	387.01	386.51	386.81	386.86	387.36	387.31	387.41	387.41	386.91
18......	387.11	387.01	386.81	387.01	386.51	386.51	387.01	387.31	387.21	387.41	387.31	386.81
19......	387.06	386.81	386.41	386.91	386.41	386.96	387.11	387.16	387.31	387.31	387.11	386.91
20......	387.11	387.01	386.51	386.96	386.31	386.96	387.06	387.21	387.21	387.41	387.21	386.96
21......	387.16	387.11	386.71	386.86	386.06	386.86	387.01	387.16	387.31	387.41	387.01	387.01
22......	386.61	387.11	386.76	386.91	386.26	386.91	386.96	387.31	387.31	387.31	387.11	386.96
23......	386.91	387.11	386.66	386.91	386.26	386.96	386.81	387.41	387.21	387.21	387.11	386.96
24......	386.91	387.11	386.66	386.86	386.41	386.91	387.11	387.41	387.16	387.31	387.01	386.96
25......	386.91	387.06	386.61	386.86	386.61	386.76	387.11	387.51	387.31	387.21	387.11	386.91
26......	386.86	386.81	386.41	386.86	386.51	386.96	387.21	387.41	387.31	387.31	387.01	386.96
27......	387.06	387.11	387.01	386.86	386.36	386.96	387.06	387.41	387.21	387.21	387.21	386.96
28......	387.21	387.11	386.96	386.86	386.21	386.96	387.16	387.41	387.41	387.21	387.11	386.91
29......	386.56	......	386.71	386.71	386.41	386.96	387.01	387.41	387.31	387.06	387.11	386.81
30......	386.91	......	386.76	386.61	386.11	386.96	386.86	387.51	387.21	387.21	387.01	386.86
31......	386.91	......	386.81	......	386.26	......	387.11	387.61	......	387.21	......	386.91

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River below Lock No. 6 at Seneca Falls, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	391.76	392.06	391.86	392.21	392.51	392.21	392.31	*a*	392.51	392.21	392.41	392.31
2.....	392.21	392.26	391.96	392.11	392.51	392.26	392.11	*a*	392.31	392.31	392.31	392.41
3.....	392.21	392.21	391.96	392.11	392.46	392.21	392.31	*a*	392.31	392.31	392.41	392.41
4.....	392.11	392.11	391.81	392.26	392.46	392.01	392.11	392.21	392.31	392.41	392.31	392.11
5.....	392.21	391.71	391.41	392.76	392.46	392.21	392.31	392.11	392.31	392.21	392.11	391.96
6.....	392.31	391.81	391.91	392.51	392.41	392.21	392.31	392.11	392.41	392.31	392.31	392.01
7.....	392.06	391.91	391.81	392.56	392.41	392.26	392.36	392.16	392.21	392.21	392.41	391.96
8.....	392.01	391.91	391.81	392.46	392.41	392.26	392.36	392.21	392.41	392.41	392.41	391.91
9.....	392.11	391.96	391.86	392.31	392.46	392.26	392.16	392.26	392.31	392.21	392.21	392.01
10.....	392.06	392.01	392.41	392.51	392.46	392.26	392.36	392.11	392.41	392.41	392.41	392.31
11.....	392.06	391.91	391.76	392.51	392.41	392.01	392.36	392.11	392.41	392.41	392.31	392.11
12.....	392.16	391.41	392.01	392.46	392.46	392.31	392.36	392.16	392.41	392.31	392.31	391.91
13.....	392.41	391.91	392.01	392.51	392.46	392.31	392.26	392.11	392.21	392.41	392.41	391.96
14.....	392.26	392.01	392.01	392.46	392.21	392.21	392.36	392.16	392.31	392.21	392.21	392.01
15.....	391.56	392.01	392.11	392.51	392.46	392.26	392.31	392.21	392.41	392.31	392.31	392.11
16.....	391.91	392.06	391.51	392.41	392.46	392.31	392.16	392.16	392.31	392.41	392.41	392.06
17.....	392.11	392.06	391.91	392.46	392.46	392.31	392.31	392.26	392.21	392.31	392.41	392.01
18.....	392.11	392.01	391.96	392.51	392.46	392.11	392.36	392.26	392.31	392.31	392.31	391.96
19.....	392.01	391.61	391.71	392.46	392.36	392.31	392.36	392.26	392.21	392.31	392.31	392.06
20.....	392.11	392.01	391.76	392.46	392.31	392.36	392.36	392.11	392.41	392.41	392.41	391.96
21.....	392.21	391.91	391.96	392.46	392.21	392.26	392.41	392.16	392.31	392.31	392.31	392.06
22.....	391.81	391.91	391.81	392.51	392.36	392.26	392.36	392.31	392.31	392.21	392.41	392.11
23.....	392.21	392.01	391.91	392.51	392.26	392.36	392.21	392.36	392.21	392.31	392.41	392.06
24.....	392.21	391.91	391.81	392.51	392.31	392.26	392.41	392.41	392.16	392.41	392.31	392.01
25.....	392.01	391.96	391.91	392.56	392.31	392.16	392.41	392.51	392.31	392.21	392.41	391.96
26.....	391.91	391.71	391.71	392.46	392.26	392.36	392.51	392.41	392.41	392.31	392.41	392.06
27.....	392.06	392.21	392.31	392.46	392.21	392.36	392.41	392.41	392.31	392.21	392.31	392.11
28.....	392.21	392.21	392.21	392.51	392.06	392.31	392.46	392.51	392.21	392.21	392.31	392.01
29.....	391.66	......	392.01	392.41	392.16	392.36	392.21	392.41	392.41	392.01	392.41	392.06
30.....	392.16	......	392.06	392.41	392.01	392.31	392.21	392.41	392.41	392.21	392.41	392.01
31.....	392.11	......	392.01	......	392.16	......	392.31	392.51	......	392.21	......	391.91

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River above Seneca Falls, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	429.61	429.77	429.79	429.79	429.91	429.69	429.74	429.75	429.74	429.74	429.77	429.79
2.....	429.79	429.79	429.81	429.77	429.89	429.79	429.74	429.70	429.68	429.74	429.79	429.79
3.....	429.77	429.79	429.79	429.79	429.94	429.77	429.74	429.67	429.70	429.69	429.79	429.79
4.....	429.69	429.81	429.81	429.81	429.91	429.79	429.74	429.63	429.71	429.74	429.79	429.81
5.....	429.77	429.67	429.69	430.01	429.89	429.77	429.77	429.65	429.70	429.71	429.74	429.79
6.....	429.79	429.74	429.79	429.87	429.91	429.74	429.84	429.65	429.71	429.69	429.79	429.79
7.....	429.79	429.74	429.79	429.94	429.84	429.71	429.81	429.70	429.71	429.69	429.71	429.81
8.....	429.74	429.74	429.79	429.89	429.87	429.71	429.74	429.67	429.72	429.79	429.79	429.79
9.....	429.74	429.71	429.74	429.89	429.87	429.69	429.67	429.63	429.69	429.74	429.77	429.79
10.....	429.71	429.69	429.97	429.91	429.87	429.71	429.64	429.69	429.73	429.79	429.79	429.79
11.....	429.74	429.74	429.77	429.87	429.87	429.79	429.71	429.63	429.73	429.74	429.81	429.81
12.....	429.74	429.69	429.81	429.87	429.87	429.79	429.77	429.63	429.71	429.74	429.77	429.81
13.....	429.79	429.79	429.87	429.89	*a*	429.77	429.69	429.65	429.72	429.77	429.77	429.87
14.....	429.74	429.77	429.79	429.89	*a*	429.69	429.69	429.61	429.72	429.74	429.74	429.81
15.....	429.67	429.79	429.84	429.89	429.84	429.69	429.74	429.62	429.71	429.77	429.74	429.84
16.....	429.71	429.77	429.77	429.89	429.89	429.74	429.71	429.59	429.67	429.74	429.77	429.84
17.....	429.79	429.80	429.79	429.91	429.84	429.74	429.63	429.64	429.69	429.79	429.79	429.79
18.....	429.79	429.81	429.74	429.91	429.87	429.74	429.65	*a*	429.73	429.79	429.84	429.87
19.....	429.74	429.77	429.79	429.91	429.81	429.79	429.68	*a*	429.70	429.79	429.79	429.81
20.....	429.79	429.81	429.77	429.91	429.79	429.79	429.72	*a*	429.71	429.79	429.81	429.81
21.....	429.79	429.77	429.69	429.91	429.81	429.74	429.73	429.61	429.69	429.79	429.81	429.81
22.....	429.74	429.81	429.79	429.97	429.81	429.74	429.73	429.67	429.71	429.74	429.81	429.81
23.....	429.71	429.79	429.74	429.97	429.77	429.74	429.74	429.70	429.71	429.77	429.81	429.81
24.....	429.74	429.77	429.77	429.94	429.79	429.74	429.71	429.63	429.69	429.77	429.81	429.81
25.....	429.71	429.77	429.69	429.94	429.74	429.74	429.69	429.65	429.69	429.79	429.81	429.81
26.....	429.79	429.79	429.71	429.91	429.74	429.74	429.75	429.57	429.69	429.79	429.77	429.77
27.....	429.79	429.89	429.87	429.91	429.69	429.74	429.73	429.50	429.69	429.79	429.79	429.81
28.....	429.79	429.84	429.87	429.91	429.67	429.74	429.69	429.51	429.69	429.77	429.84	429.84
29.....	429.79	......	429.81	429.91	429.64	429.74	429.73	429.58	429.69	429.69	429.81	429.99
30.....	*a*	......	429.80	429.91	*a*	429.77	429.67	429.70	429.69	429.74	429.81	429.89
31.....	429.69	......	429.84	......	*a*	......	429.68	429.70	......	429.71	......	429.89

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River below Waterloo, N. Y

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	429.78	429.93	429.93	429.88	430.13	429.93	430.03	*a*	*a*	431.03	430.63	430.58
2.....	429.73	429.98	429.93	429.83	430.18	429.88	429.93	*a*	*a*	431.03	430.68	430.63
3.....	429.88	429.88	429.83	429.98	430.13	430.03	430.08	*a*	431.08	431.03	430.68	430.68
4.....	429.93	429.88	429.78	430.03	430.23	429.78	429.88	*a*	431.08	430.98	430.58	430.58
5.....	429.83	429.78	429.73	430.13	430.13	429.98	430.03	*a*	431.13	431.03	430.63	430.58
6.....	430.03	429.93	429.88	430.08	429.98	429.93	430.18	*a*	431.08	431.03	430.58	430.58
7.....	430.08	429.93	429.93	430.03	430.08	430.03	430.08	*a*	431.03	431.03	430.68	430.58
8.....	429.78	429.83	429.83	429.98	430.08	429.98	430.13	*a*	431.13	430.93	430.58	430.58
9.....	429.93	429.78	430.03	429.93	430.13	430.03	430.08	*a*	431.13	430.88	430.53	430.68
10.....	429.93	429.93	430.18	430.03	430.23	429.88	430.23	*a*	430.98	430.83	430.58	430.68
11.....	430.03	429.88	429.98	430.13	430.08	429.93	430.33	*a*	431.03	430.78	430.58	430.68
12.....	430.08	429.78	430.03	430.13	430.13	430.03	430.38	*a*	430.98	430.63	*a*	430.63
13.....	429.93	429.83	429.98	430.23	430.03	430.08	430.38	431.38	430.98	430.58	*a*	430.63
14.....	429.98	429.88	429.88	430.13	429.93	430.03	430.33	430.98	430.98	430.53	*a*	430.68
15.....	429.88	429.83	429.88	430.23	430.13	429.93	430.23	430.93	431.03	430.63	*a*	430.68
16.....	430.03	429.93	430.03	430.08	430.03	429.98	430.28	431.03	430.93	430.58	*a*	430.73
17.....	430.08	429.93	430.13	430.18	430.13	429.93	430.28	430.98	431.03	430.68	*a*	*a*
18.....	429.98	429.78	429.73	430.13	429.98	429.98	430.53	431.03	430.98	430.58	*a*	*a*
19.....	430.03	429.93	429.83	430.03	430.13	430.08	430.38	431.18	430.98	430.58	430.63	*a*
20.....	429.98	429.93	429.88	430.13	430.08	429.93	430.48	431.08	431.03	430.53	430.58	*a*
21.....	429.88	429.83	430.03	430.08	430.03	430.03	430.43	431.08	431.03	430.58	430.53	*a*
22.....	429.58	429.93	429.93	430.18	430.13	430.08	430.33	431.13	431.03	*a*	430.58	*a*
23.....	429.88	429.98	429.83	430.18	430.08	429.93	430.33	431.08	430.98	*a*	430.58	*a*
24.....	429.93	429.88	429.93	430.13	430.03	429.88	430.38	431.18	431.03	*a*	430.53	430.78
25.....	429.83	429.83	429.88	430.23	430.13	429.88	430.53	431.18	430.98	*a*	430.63	430.83
26.....	430.08	429.88	429.78	430.13	430.03	430.03	430.63	431.18	430.98	*a*	430.68	430.73
27.....	430.03	430.03	429.93	430.23	429.98	430.18	430.58	431.08	431.03	*a*	430.58	430.78
28.....	429.93	429.83	429.88	430.13	429.88	430.08	430.48	431.18	430.98	*a*	430.63	430.78
29.....	429.78	......	429.98	430.08	429.93	430.03	430.63	431.23	431.03	430.63	430.53	430.83
30.....	429.93	......	430.03	430.03	429.98	430.13	430.68	431.13	431.03	430.68	430.58	430.78
31.....	429.98	......	429.93	......	429.88	......	430.68	431.18	......	430.68	......	430.78

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River above Waterloo, N. Y

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	444.77	444.67	445.17	446.12	446.07	445.57	445.17	*a*	*a*	444.17	444.12	444.17
2.....	444.77	444.62	445.02	446.17	446.02	445.47	445.52	*a*	*a*	444.07	444.17	444.17
3.....	444.57	445.02	445.07	446.07	446.12	445.37	445.17	*a*	444.17	444.07	444.12	444.12
4.....	444.47	444.72	445.22	446.02	446.07	445.42	445.42	*a*	444.12	444.17	444.12	444.02
5.....	444.57	444.87	445.27	446.17	446.12	445.22	445.57	*a*	444.07	444.17	444.12	444.02
6.....	444.62	444.62	445.17	446.12	446.22	445.17	444.92	*a*	444.17	444.12	444.12	443.97
7.....	444.67	444.67	445.07	446.17	446.12	445.22	444.87	*a*	444.12	444.12	444.12	443.92
8.....	444.82	444.72	445.07	446.22	446.07	445.07	445.12	*a*	444.17	444.17	444.07	443.92
9.....	445.07	444.87	445.27	446.27	446.12	444.92	445.42	*a*	444.17	444.12	444.07	443.92
10.....	445.02	444.77	445.42	446.17	446.07	445.02	444.97	*a*	444.17	444.17	444.12	444.12
11.....	444.47	444.82	445.62	446.22	446.17	445.12	444.92	*a*	444.17	444.12	444.07	444.07
12.....	444.37	445.02	445.62	446.22	446.07	445.17	444.82	*a*	444.22	444.17	*a*	444.07
13.....	444.42	444.82	445.57	446.27	446.22	445.07	444.72	444.02	444.17	444.12	*a*	444.07
14.....	444.62	444.77	445.67	446.22	446.22	445.02	444.92	443.72	444.22	444.12	*a*	444.07
15.....	444.82	444.87	445.72	446.17	446.12	444.87	445.12	443.42	444.17	444.17	*a*	444.07
16.....	444.62	444.87	445.57	446.22	446.17	444.67	445.52	443.47	444.17	444.17	*a*	444.07
17.....	444.52	444.77	445.47	446.17	446.02	444.92	444.97	443.47	444.17	444.12	*a*	*a*
18.....	444.57	444.92	445.72	446.17	446.07	445.12	444.82	443.42	444.17	444.17	*a*	*a*
19.....	444.52	445.12	445.72	446.07	446.17	444.82	444.87	443.52	444.17	444.17	444.12	*a*
20.....	445.07	444.92	445.57	446.02	446.12	444.77	444.87	443.92	444.22	444.07	444.12	*a*
21.....	444.77	444.92	445.67	446.17	446.07	444.67	444.97	443.97	444.22	444.17	444.12	*a*
22.....	444.82	444.87	445.77	446.32	445.97	444.72	445.02	444.17	444.22	*a*	444.07	*a*
23.....	444.52	444.87	445.72	446.32	445.92	444.77	445.12	444.02	444.17	*a*	444.12	*a*
24.....	445.07	444.82	445.77	446.22	445.77	444.97	445.07	444.02	444.17	*a*	444.12	444.22
25.....	444.52	444.92	445.87	446.17	445.82	445.62	444.52	444.12	444.17	*a*	444.12	444.22
26.....	444.67	445.12	445.92	446.07	445.92	445.32	444.37	444.12	444.07	*a*	444.02	444.22
27.....	444.62	445.02	446.02	446.02	445.87	445.07	444.32	444.02	444.02	*a*	444.07	444.27
28.....	444.72	445.22	446.12	446.07	445.92	445.07	444.32	444.12	443.97	*a*	444.12	444.37
29.....	444.82	......	446.07	446.12	445.87	445.02	444.22	444.12	444.07	444.12	444.17	444.37
30.....	444.62	......	446.02	446.17	445.82	445.02	444.52	444.17	444.17	444.17	444.17	444.37
31.....	445.57	......	446.07	......	445.67	......	444.32	444.12	......	444.22	......	444.37

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River below Guard-lock, near Geneva, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	445.03	445.23	445.43	446.43	446.63	446.43	446.43	*a*	446.03	445.73	445.48	444.93
2	445.03	445.23	445.43	446.43	446.63	446.43	446.43	*a*	446.03	445.68	445.43	444.93
3	444.93	445.13	445.33	446.33	446.63	446.43	446.43	*a*	445.98	445.73	445.43	444.93
4	444.93	445.13	445.33	446.43	446.73	446.43	446.43	*a*	446.03	445.68	445.43	444.93
5	444.93	445.23	445.63	446.53	446.73	446.53	446.43	*a*	446.03	445.73	445.43	444.93
6	444.93	445.03	445.53	446.63	446.63	446.53	446.43	*a*	445.98	445.63	445.43	444.93
7	444.93	445.03	445.53	446.53	446.63	446.43	446.43	*a*	445.93	445.63	445.48	444.93
8	444.93	445.03	445.53	446.63	446.63	446.43	446.43	*a*	446.08	445.63	445.43	444.93
9	444.93	445.13	445.53	446.63	446.63	446.53	446.33	446.18	446.03	445.68	445.38	444.93
10	444.93	445.13	445.63	446.63	446.63	446.53	446.33	446.13	446.08	445.63	445.43	444.88
11	444.93	445.13	445.63	446.63	446.63	446.53	446.43	446.03	446.03	445.63	445.43	444.88
12	444.93	445.23	445.73	446.73	446.53	446.53	446.43	446.05	446.03	445.63	445.43	444.88
13	444.93	445.23	445.83	446.73	446.63	446.63	446.33	446.08	446.03	445.63	445.43	444.88
14	444.93	445.13	445.83	446.73	446.63	446.63	446.33	446.03	446.03	445.63	445.43	444.88
15	445.13	445.13	445.83	446.63	446.63	446.63	446.23	446.08	446.08	445.63	445.43	444.98
16	445.23	445.13	445.93	446.63	446.63	446.53	446.23	446.03	445.98	445.63	445.38	444.98
17	445.33	445.23	446.03	446.63	446.53	446.53	446.23	446.13	445.93	445.63	445.38	445.08
18	445.23	445.23	446.03	446.73	446.53	446.53	446.23	446.08	445.93	445.68	445.38	445.08
19	445.03	445.33	446.03	446.73	446.53	446.43	446.23	446.03	445.93	445.63	445.38	445.08
20	445.03	445.33	446.03	446.63	446.53	446.43	446.33	445.98	445.83	445.63	445.33	445.03
21	445.03	445.23	445.93	446.63	446.53	446.43	446.33	445.98	445.98	445.63	445.33	445.03
22	445.03	445.23	446.03	446.63	446.53	446.43	446.33	446.03	445.93	445.63	445.33	445.03
23	445.13	445.23	446.03	446.73	446.53	446.53	446.33	445.93	445.83	445.58	445.33	445.03
24	445.13	445.23	446.03	446.73	446.43	446.53	446.33	445.93	445.93	445.63	445.33	444.98
25	445.03	445.23	446.13	446.73	446.43	446.53	446.43	445.93	445.83	445.63	445.33	444.98
26	444.93	445.33	446.13	446.73	446.43	446.53	446.23	445.93	445.83	445.58	445.23	444.98
27	445.03	445.43	446.23	446.73	446.43	446.53	446.23	446.03	445.83	445.58	445.18	444.98
28	445.03	445.43	446.23	446.73	446.43	446.43	446.23	445.98	445.78	445.58	445.18	445.03
29	445.23	......	446.33	446.73	446.43	446.53	446.23	446.03	445.83	445.58	445.18	444.93
30	445.23	......	446.33	446.73	446.43	446.53	446.13	446.03	445.73	445.58	445.08	444.88
31	445.23	......	446.33	......	446.43	......	446.13	446.03	......	445.58	......	445.03

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Seneca River above Guard-lock, near Geneva, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	445.03	445.23	445.43	446.43	446.63	446.43	446.43	*a*	446.03	445.63	445.48	444.93
2	445.03	445.23	445.43	446.43	446.63	446.43	446.43	*a*	446.03	445.68	445.43	444.93
3	444.93	445.13	445.33	446.33	446.63	446.43	446.43	*a*	445.98	445.73	445.43	344.93
4	444.93	445.13	445.33	446.43	446.73	446.43	446.43	*a*	446.03	445.68	445.43	444.93
5	444.93	445.23	445.63	446.53	446.73	446.53	446.43	*a*	446.03	445.63	445.43	444.93
6	444.93	445.03	445.53	446.63	446.63	446.53	446.43	*a*	445.98	445.63	445.43	444.93
7	444.93	445.03	445.53	446.53	446.63	446.43	446.43	*a*	445.93	445.63	445.48	444.93
8	444.93	445.03	445.53	446.63	446.63	446.43	446.43	*a*	446.08	445.63	445.43	444.93
9	444.93	445.13	445.53	446.63	446.63	446.53	446.33	446.13	446.03	445.68	445.38	444.93
10	444.93	445.13	445.63	446.63	446.63	446.53	446.33	446.15	446.08	445.63	445.43	444.88
11	444.93	445.13	445.63	446.63	446.63	446.53	446.43	446.08	446.03	445.63	445.43	444.88
12	444.93	445.23	445.73	446.73	446.53	446.53	446.43	446.05	446.03	445.63	445.43	444.88
13	444.93	445.23	445.83	446.73	446.63	446.63	446.33	446.03	446.03	445.63	445.43	444.88
14	444.93	445.13	445.83	446.73	446.63	446.63	446.33	445.98	446.03	445.63	445.43	444.88
15	445.13	445.13	445.83	446.63	446.63	446.63	446.23	446.08	446.08	445.63	445.43	444.98
16	445.23	445.13	445.93	446.63	446.63	446.53	446.23	446.03	445.98	445.63	445.38	444.98
17	445.33	445.23	446.03	446.63	446.53	446.53	446.23	446.13	445.93	445.63	445.38	445.08
18	445.23	445.23	446.03	446.73	446.53	446.53	446.23	446.08	445.93	445.68	445.38	445.08
19	445.03	445.33	446.03	446.73	446.53	446.43	446.23	445.98	445.93	445.63	445.33	445.08
20	445.03	445.33	446.03	446.63	446.53	446.43	446.33	445.98	445.83	445.63	445.33	445.03
21	445.03	445.23	445.93	446.63	446.53	446.43	446.33	445.98	445.98	445.63	445.33	445.03
22	445.03	445.23	446.03	446.63	446.53	446.43	446.33	446.03	445.88	445.63	445.33	445.03
23	445.13	445.23	446.03	446.73	446.53	446.53	446.33	445.93	445.83	445.58	445.33	445.03
24	445.13	445.23	446.03	446.73	446.43	446.53	446.33	445.93	445.88	445.63	445.33	444.98
25	445.03	445.23	446.13	446.73	446.43	446.53	446.43	445.93	445.83	445.63	445.33	444.98
26	444.93	445.33	446.13	446.73	446.43	446.53	446.23	445.93	445.83	445.58	445.23	444.98
27	445.03	445.43	446.23	446.73	446.43	446.53	446.23	446.03	445.83	445.58	445.18	444.98
28	445.03	445.43	446.23	446.73	446.43	446.43	446.23	445.98	445.78	445.58	445.18	445.03
29	445.23	......	446.33	446.73	446.43	446.53	446.23	446.03	445.83	445.58	445.18	444.93
30	445.23	......	446.33	446.73	446.43	446.53	446.13	446.03	445.83	445.58	445.08	444.88
31	445.23	......	446.33	......	446.43	......	446.13	446.03	......	445.58	......	444.93

a No record.

SENECA LAKE AT GENEVA, N. Y.

Tables are included showing the elevation of water-surface of Seneca lake at the Geneva city pumping station, located about 2 miles south of Geneva on the west shore of the lake. These records are not referred to Barge canal datum, but are referred to the U. S. Geological Survey datum. A table is also presented showing the elevation of water-surface of Seneca lake at Geneva at various times. The data for this table was contributed by Mr. Charles T. Church, Superintendent of the Department of Public Works of Geneva.

The gage used at Geneva pumping station consists of two galvanized steel sections subdivided to feet and tenths. It is secured to a vertical post in the intake well of the pumping station. The elevation of the zero mark is 440.78, U. S. Geological Survey datum. The water elevation in the pump well is the same as in the lake. Readings are taken once each week.

Mean Daily Elevation of Water-surface (U. S. G. S. Datum) of Seneca Lake at Geneva Pumping Station.

DAY.	Jan.	Feb.	Mar.	April.	May.	June
1911.						
1	......	......	......	......	......	......
2	......	......	444.68	......	......	......
3	......	......	......	......	......	......
4	444.28	......	......	......	445.88	......
5	......	......	......	......	......	......
6	......	......	444.58	445.68	......	......
7	......	......	......	......	......	445.68
8	......	444.28	......	......	......	......
9	......	......	......	......	......	......
10	443.98	......	......	......	445.78	......
11	......	......	......	......	......	......
12	......	......	......	445.88	......	......
13	......	......	......	......	......	......
14	......	......	......	......	......	445.78
15	......	444.38	445.08	......	......	......
16	......	......	......	......	......	......
17	......	......	......	......	......	......
18	444.18	......	......	......	......	......
19	......	......	......	445.78	445.58	......
20	......	......	......	......	......	......
21	......	......	......	......	......	......
22	......	444.48	445.28	......	......	......
23	......	......	......	......	......	......
24	......	......	......	......	445.58	......
25	......	......	......	......	......	......
26	......	......	......	445.88	......	......
27	444.28	......	......	......	......	......
28	......	......	......	......	......	445.88
29	......	......	......	......	......	......
30	......	......	445.48	......	......	......
31	......	......	......	......	445.68	......

Data of Elevation of Seneca Lake at Steamboat Landing, Geneva, N. Y.

DATE.	Geneva datum (L. V. R. R.)	U. S. G. S. datum	Taken by
April 11, 1900	437.28	428.65	Chas. T. Church.
Dec. 20, 1900	*434.60	425.97	Chas. T. Church.
April 24, 1901	†430.96	430.33	Chas. T. Church.
Mar. 6, 1902	437.94	429.31	Chas. T. Church.
Mar. 23, 1903	438.04	429.41	P. H. Brennan.
April 6, 1903	438.96	430.33	P. H. Brennan.
April 9, 1903	438.91	430.28	P. H. Brennan.
May 14, 1903	438.00	429.37	P. H. Brennan.
Sept. 25, 1903	437.78	429.15	P. H. Brennan.
Nov. 17, 1903	437.62	428.99	P. H. Brennan.
Jan. 15, 1904	436.50	427.87	P. H. Brennan.
Feb. 8, 1904	437.50	428.87	P. H. Brennan.
Mar. 8, 1904	438.08	429.45	P. H. Brennan.
Mar. 29, 1904	438.64	430.01	P. H. Brennan.
April 21, 1904	438.64	430.01	P. H. Brennan.
April 29, 1904	438.81	430.18	P. H. Brennan.
May 14, 1904	438.47	429.84	P. H. Brennan.
Nov. 3, 1904	436.59	427.96	P. H. Brennan.
Nov. 9, 1904	436.42	427.79	P. H. Brennan.
Dec. 6, 1904	435.77	427.14	P. H. Brennan.
Dec. 13, 1904	435.72	427.09	P. H. Brennan.
Feb. 8, 1905	435.40	426.77	P. H. Brennan.
Mar. 15, 1905	435.07	426.44	P. H. Brennan.
April 24, 1905	437.32	428.69	P. H. Brennan.
June 21, 1905	438.37	429.74	P. H. Brennan.
Sept. 13, 1905	436.31	427.68	P. H. Brennan.
Feb. —, 1909	435.14	426.51	P. H. Brennan.
July —, 1909	437.41	428.78	P. H. Brennan.
Dec. —, 1909	435.02	426.39	P. H. Brennan.

* Lowest. † Highest.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Clyde River at Clyde, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	385.00	382.70	384.80	383.10	382.00	380.30	380.40	380.00	380.10	380.00	380.40	380.20
2	385.70	382.50	384.20	*b*	382.20	380.30	380.40	380.10	380.00	380.00	380.30	380.20
3	386.20	382.40	383.60	382.90	382.20	380.40	380.30	380.00	380.00	380.10	380.30	380.10
4	386.20	382.40	383.50	383.10	382.10	380.40	380.30	380.00	380.00	380.10	380.30	380.00
5	386.00	382.60	382.70	383.60	381.90	380.40	380.20	380.00	380.00	380.10	380.30	380.00
6	386.10	382.50	382.20	384.80	381.90	380.60	380.20	380.10	380.10	380.10	380.50	380.00
7	385.80	382.70	381.80	385.20	381.80	380.70	380.10	380.10	380.10	380.10	380.50	380.10
8	385.80	382.70	381.90	385.00	381.60	380.60	380.00	380.10	380.30	380.10	380.60	380.00
9	385.40	382.80	382.00	*b*	381.70	380.60	380.00	380.10	380.40	380.10	380.60	380.10
10	385.30	382.70	382.30	384.20	381.60	380.50	380.00	380.10	380.40	380.00	380.50	380.30
11	385.40	382.50	384.00	384.00	381.60	380.60	380.00	380.00	380.40	380.20	380.40	380.70
12	385.40	382.40	384.90	383.70	381.70	380.50	380.10	380.10	380.30	380.20	380.30	381.30
13	385.70	382.60	385.00	383.50	381.50	380.60	380.00	380.00	380.20	380.30	380.30	381.40
14	386.00	382.70	385.10	383.30	381.30	380.50	379.90	380.00	380.20	380.30	380.30	381.30
15	385.90	382.90	384.50	383.10	381.10	380.60	379.90	380.00	380.10	380.40	380.30	381.40
16	385.70	383.10	384.20	*b*	381.10	380.50	380.00	380.00	380.10	380.30	380.50	381.30
17	385.40	383.10	383.70	382.90	380.80	380.50	380.20	380.00	380.10	380.20	380.50	381.20
18	385.10	383.30	383.70	382.70	380.70	380.60	380.30	380.00	380.10	380.20	380.60	381.10
19	385.00	383.40	383.00	382.60	380.80	380.50	380.30	380.10	380.00	380.50	380.80	381.00
20	384.90	383.60	382.70	382.40	381.00	380.60	380.30	380.20	380.00	380.50	380.80	380.80
21	384.90	383.50	382.50	382.40	381.00	380.50	380.20	380.10	380.00	380.40	380.80	380.50
22	385.00	383.70	383.00	382.50	381.10	380.50	380.20	380.10	380.10	380.40	380.70	380.60
23	385.20	383.80	382.80	382.80	381.00	380.40	380.20	380.00	380.10	380.30	380.60	381.00
24	385.30	384.10	382.60	382.90	380.90	380.30	380.20	380.00	380.10	380.30	380.60	381.10
25	385.30	384.40	382.90	382.70	380.80	380.30	380.30	380.00	380.10	380.30	380.60	381.10
26	385.60	384.50	383.00	382.40	380.70	380.50	380.30	380.00	380.10	380.30	380.60	381.10
27 *a*	382.10	384.70	383.20	382.30	380.70	380.50	380.20	380.00	380.00	380.30	380.50	381.20
28	381.80	385.00	384.00	382.20	380.50	380.40	380.20	379.90	380.10	380.30	380.40	381.20
29	382.20	......	384.30	382.10	380.30	380.40	380.20	380.20	380.10	380.30	380.40	380.20
30	382.10	......	383.70	382.00	380.30	380.30	382.10	380.30	380.10	380.30	380.40	380.50
31	382.00	......	383.70	......	380.30	......	380.10	380.10	......	380.40	......	380.60

a Coffer-dam removed downstream, January 27. *b* No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Clyde River at Geneva St., Lyons, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	392.60	393.10	395.80	393.60	392.60	391.70	391.90	391.90	393.00	392.80	393.20	392.50
2......	393.30	392.90	394.90	393.40	392.50	391.60	391.90	391.90	392.90	393.00	393.40	392.50
3......	394.45	392.70	394.30	393.10	392.50	391.60	391.90	392.10	392.90	393.10	393.20	392.50
4......	394.10	392.70	393.80	393.40	392.50	391.50	391.90	392.00	393.00	392.90	393.20	392.40
5......	393.90	392.80	395.50	395.50	392.50	391.40	391.90	392.30	393.10	392.80	393.40	392.20
6......	393.45	392.90	393.30	397.30	392.30	391.90	391.70	392.20	393.20	392.80	393.40	392.30
7......	392.98	392.70	392.70	397.00	392.30	391.70	391.60	392.20	393.10	393.10	393.60	392.00
8......	392.90	392.30	392.90	395.90	392.20	391.30	391.70	392.40	393.10	393.10	393.60	392.00
9......	393.00	392.20	393.10	395.30	392.10	391.50	391.70	392.30	393.10	393.00	393.50	392.00
10......	392.95	392.00	394.90	394.90	392.00	391.50	391.70	391.90	393.20	392.90	392.90	392.40
11......	392.65	392.10	396.20	394.00	392.00	391.70	391.70	392.40	393.40	392.90	392.90	393.00
12......	393.40	392.00	396.50	393.60	392.00	391.90	391.90	392.20	393.20	392.90	392.70	393.50
13......	393.50	392.00	396.80	393.30	391.90	392.20	391.80	392.30	392.90	392.90	392.50	394.00
14......	393.80	392.00	396.60	393.10	391.90	392.10	391.80	392.30	393.00	392.90	392.50	394.30
15......	393.60	392.00	396.20	393.20	391.80	391.70	391.90	392.10	392.70	393.00	392.70	394.10
16......	393.50	391.90	395.90	393.00	391.90	391.90	391.90	391.90	392.70	393.10	392.70	394.10
17......	393.00	392.20	393.70	392.80	392.00	391.60	392.00	392.00	392.70	393.00	393.00	393.90
18......	392.70	395.40	393.80	392.70	392.00	391.70	393.00	392.20	392.70	393.00	393.00	393.80
19......	392.50	395.40	393.40	392.00	392.00	391.80	392.70	392.10	392.70	393.00	393.00	393.70
20......	392.20	395.50	393.20	392.40	392.00	391.70	392.40	391.90	393.00	393.00	393.00	393.60
21......	392.30	395.50	393.30	392.30	392.00	391.80	392.30	391.70	393.00	393.00	392.90	393.40
22......	392.40	394.20	393.60	392.50	391.80	391.70	392.30	392.10	393.00	393.00	392.70	393.10
23......	392.50	393.70	394.00	393.00	391.60	391.70	392.30	392.30	392.70	393.00	392.70	393.10
24......	392.30	393.30	393.20	393.10	391.60	391.70	392.40	392.60	392.80	393.00	392.70	393.20
25......	392.20	393.30	393.00	393.00	392.10	391.70	392.20	392.60	392.90	393.20	392.70	393.20
26......	392.10	394.50	394.20	392.60	391.50	391.70	392.10	392.90	392.80	393.10	392.70	393.20
27......	393.40	396.55	394.80	392.50	391.35	392.10	391.80	393.10	392.90	393.20	392.70	393.60
28......	394.30	396.50	395.00	392.50	391.50	392.00	391.70	393.10	392.90	393.20	392.70	393.50
29......	394.40	......	395.30	392.40	391.10	391.90	392.00	393.30	392.70	393.20	392.70	393.20
30......	394.50	......	394.70	392.50	391.20	391.90	391.90	393.10	392.70	393.20	392.70	393.20
31......	393.60	......	393.80	......	391.30	......	391.90	393.10	......	393.10	......	392.80

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Ganargua Creek, North of Newark, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	407.90	407.80	409.40	410.00	409.00	407.90	408.20	407.50	407.40	407.90	408.80	408.70
2......	407.80	408.90	409.20	410.10	408.70	408.10	408.00	407.40	407.40	407.90	408.60	408.70
3......	407.80	409.00	408.90	410.30	408.50	408.00	408.00	407.40	407.40	408.00	408.40	408.60
4......	407.70	408.80	408.90	410.50	408.20	408.20	407.70	407.40	407.60	408.20	408.10	408.60
5......	407.70	408.80	408.90	410.80	408.00	408.30	407.70	407.50	407.60	407.90	408.00	408.80
6......	407.70	408.90	408.80	411.00	408.20	408.30	407.40	407.60	407.70	408.10	408.00	408.80
7......	407.80	409.00	408.80	410.60	408.00	408.50	407.30	407.60	407.70	408.20	408.10	408.90
8......	407.70	408.90	409.00	410.20	408.00	408.60	407.60	407.50	407.60	408.30	408.10	409.10
9......	407.90	408.70	409.60	410.00	407.90	408.60	407.50	407.50	407.60	408.30	408.20	409.10
10......	407.90	408.70	410.90	410.20	407.90	408.40	407.40	407.60	407.70	408.50	408.20	409.10
11......	408.00	408.30	411.30	410.00	407.80	408.40	407.40	407.50	407.60	408.50	408.20	409.20
12......	407.80	408.40	411.50	409.70	407.80	408.80	407.50	407.50	407.60	408.50	408.30	409.20
13......	407.80	408.40	412.00	409.60	407.80	408.60	407.60	407.40	407.70	408.40	408.30	409.10
14......	407.70	408.50	412.20	409.30	407.70	408.60	407.40	407.40	407.60	408.40	408.20	409.30
15......	407.70	408.50	412.40	409.00	407.90	408.60	407.20	407.40	407.60	408.40	408.20	409.30
16......	407.80	408.60	412.70	409.10	407.90	408.50	407.30	407.50	407.50	408.30	408.30	409.20
17......	407.80	408.80	412.40	409.00	407.80	408.60	407.40	407.40	407.50	408.40	408.30	409.20
18......	407.70	410.80	411.00	408.80	407.80	408.50	407.30	407.30	407.50	408.40	408.40	409.00
19......	407.70	412.90	410.40	408.80	407.80	408.40	407.30	407.20	407.50	408.60	408.30	409.00
20......	407.70	411.50	410.60	408.60	407.90	408.40	407.40	407.10	407.40	408.60	408.30	408.90
21......	407.80	411.90	410.40	408.70	407.90	408.20	407.40	407.00	407.40	408.70	408.50	408.90
22......	407.70	411.30	410.30	408.80	407.80	408.20	407.50	407.00	407.60	408.70	408.50	408.80
23......	407.80	410.70	410.10	409.10	407.80	408.20	407.60	407.00	407.50	408.60	408.60	408.90
24......	407.80	410.00	409.90	409.00	407.80	408.30	407.60	406.90	407.60	408.80	408.70	408.90
25......	407.70	409.50	409.90	408.90	407.90	408.30	407.50	407.10	407.70	408.90	408.70	408.80
26......	407.70	409.90	409.70	409.00	407.80	408.20	407.40	407.20	407.70	408.80	408.70	408.70
27......	407.80	410.80	409.70	408.80	407.80	408.20	407.40	407.20	407.80	408.90	408.80	408.80
28......	407.70	409.60	410.00	408.80	407.70	408.20	407.50	407.30	407.70	408.90	408.60	408.70
29......	407.80	......	410.00	408.70	407.70	408.30	407.40	407.50	407.70	408.70	408.80	408.70
30......	407.80	......	410.30	......	407.80	408.20	407.50	407.50	407.80	408.80	408.80	408.70
31......	407.70	......	410.20	......	407.70	......	407.50	407.50	......	408.90	......	408.80

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Ganargua Creek near Palmyra, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	422.23	422.68	423.03	422.63	422.33	422.13	421.88	421.93	421.83	422.03	422.13	422.18
2......	422.43	422.63	423.03	422.63	422.43	421.98	421.68	421.88	421.78	421.93	422.03	422.03
3......	423.43	422.48	422.83	422.73	422.33	421.93	421.68	421.53	421.83	421.83	422.18	422.13
4......	423.33	422.53	422.73	422.73	422.28	421.88	421.68	421.83	421.93	422.13	422.23	422.03
5......	422.73	422.63	422.53	423.53	422.23	421.93	421.58	421.93	421.93	422.03	422.23	422.03
6......	422.68	422.53	422.48	424.33	422.18	422.23	421.13	421.88	422.13	421.98	422.33	421.98
7......	422.63	422.43	422.43	423.63	422.13	422.13	420.83	421.93	421.93	422.03	422.28	421.98
8......	422.58	422.13	422.48	423.43	422.03	422.03	420.63	421.23	422.13	422.03	422.13	422.03
9......	422.63	422.28	422.53	423.03	421.88	422.03	420.93	421.13	422.28	421.93	421.93	422.03
10......	422.63	422.23	423.73	422.93	421.88	421.93	421.28	421.33	422.23	421.93	421.98	422.23
11......	422.73	422.33	423.73	422.83	421.93	421.98	421.68	421.63	422.03	422.08	421.98	422.33
12......	422.98	422.28	423.83	422.58	421.83	421.93	421.63	421.13	421.93	421.93	422.08	422.33
13......	423.23	422.18	423.93	422.58	421.83	422.13	421.73	421.78	421.68	421.98	422.13	422.68
14......	423.03	422.23	423.63	422.63	421.88	422.03	421.63	421.73	421.73	421.88	422.13	422.93
15......	422.98	422.23	423.48	422.53	421.83	421.93	421.83	421.63	421.88	422.03	422.13	422.73
16......	422.83	422.23	423.28	422.43	421.88	421.93	421.68	421.38	421.68	421.93	422.03	422.53
17......	422.63	422.28	422.83	422.38	421.93	421.93	422.13	421.63	421.83	421.83	422.33	422.58
18......	422.53	424.83	422.73	422.43	422.03	421.88	421.93	421.78	421.93	422.03	422.13	422.63
19......	422.48	424.83	422.73	422.33	421.98	421.93	422.13	421.83	421.93	421.73	422.48	422.38
20......	422.43	423.53	422.68	422.33	421.93	421.93	422.03	421.78	421.63	421.73	422.38	422.33
21......	422.48	423.13	422.78	422.28	421.83	421.63	421.93	421.73	421.58	422.03	422.23	422.28
22......	422.58	422.83	422.88	422.43	421.83	421.58	421.73	421.33	421.83	422.03	422.18	422.23
23......	422.53	422.73	423.13	422.68	421.93	421.83	421.93	421.68	421.83	422.13	422.28	422.63
24......	422.38	422.73	422.73	422.58	422.33	421.83	421.83	421.03	421.93	422.08	422.38	422.78
25......	422.43	422.73	422.53	422.48	422.03	421.73	421.73	421.38	421.78	422.03	422.33	422.53
26......	422.38	422.93	422.88	422.33	421.83	421.93	421.83	421.88	421.13	421.93	422.33	422.48
27......	422.68	424.03	423.18	422.28	421.78	422.03	421.83	421.63	421.28	421.83	422.33	422.48
28......	423.63	423.73	423.88	422.33	421.83	421.98	421.68	422.08	421.83	421.78	422.28	422.33
29......	423.53	......	423.13	422.28	421.73	421.98	421.63	422.03	421.93	421.88	422.38	422.38
30......	423.33	......	422.93	422.18	421.68	421.93	421.83	421.63	421.73	421.73	422.33	422.33
31......	422.63	......	422.93	......	421.53	......	421.83	421.63	......	421.93	......	422.18

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Canandaigua Outlet at Alloway N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	404.52	405.62	406.62	406.12	405.42	404.52	404.12	403.72	403.72	403.92	404.02	404.32
2......	404.62	405.32	406.52	405.82	405.32	404.52	404.22	403.92	403.72	403.82	403.92	404.22
3......	406.32	405.22	406.22	405.42	405.32	404.52	404.52	403.82	403.72	403.72	403.92	403.92
4......	405.62	405.12	405.92	405.32	405.22	404.52	404.42	403.72	403.72	403.72	404.02	404.02
5......	405.32	405.42	405.92	407.22	405.12	404.52	404.22	403.72	403.72	403.72	404.32	404.32
6......	405.42	405.52	405.92	407.42	405.02	404.52	404.02	403.72	403.72	403.72	404.22	404.22
7......	405.52	405.12	405.92	407.12	404.92	404.52	403.92	403.82	403.92	403.72	404.12	404.22
8......	405.22	405.12	405.92	406.82	404.92	404.52	403.92	403.92	403.92	403.72	404.32	404.32
9......	405.12	404.92	405.92	406.52	404.92	404.52	403.92	403.92	404.12	403.92	404.32	404.32
10......	405.12	404.82	407.32	406.52	404.92	404.52	403.92	403.82	404.12	403.92	404.32	404.32
11......	404.92	404.72	406.62	406.22	404.92	404.52	403.92	403.72	403.92	403.92	404.12	404.32
12......	404.52	404.72	406.82	406.12	404.92	404.52	403.92	403.72	403.92	404.12	404.12	404.32
13......	404.72	404.72	407.02	405.82	404.92	404.52	403.92	403.72	403.72	404.22	404.12	404.42
14......	404.82	404.62	406.92	405.52	404.92	404.52	403.72	403.72	403.72	404.32	404.12	404.52
15......	405.32	404.52	406.92	405.52	404.72	404.52	403.72	403.92	403.72	404.32	404.12	404.52
16......	405.22	404.52	406.62	405.52	404.72	404.52	403.72	403.82	403.72	404.32	404.22	404.52
17......	405.12	404.62	406.32	405.42	404.72	404.52	404.12	403.72	403.72	404.32	404.32	404.52
18......	404.92	407.22	406.12	405.32	404.82	404.27	404.32	403.92	403.72	404.32	404.32	404.52
19......	404.72	409.02	405.82	405.32	404.92	404.32	404.12	404.12	403.72	404.32	404.32	404.32
20......	404.92	407.32	405.52	405.32	404.92	404.22	404.02	403.82	403.72	404.12	404.22	404.32
21......	404.92	406.52	405.32	405.32	404.82	404.12	403.92	403.72	403.72	404.22	404.12	404.52
22......	404.92	406.02	405.52	405.32	404.72	404.32	403.92	403.72	403.72	404.32	404.12	404.52
23......	404.92	405.72	405.42	405.42	404.72	404.32	403.92	403.72	403.72	404.22	404.12	404.72
24......	404.92	405.72	405.22	405.52	404.72	404.22	403.92	403.72	403.72	404.12	404.12	404.92
25......	404.92	405.52	405.42	405.32	404.72	404.12	403.92	403.72	403.72	404.32	404.12	404.82
26......	405.72	406.22	405.72	405.32	404.52	404.22	403.82	403.72	403.72	404.32	404.22	404.72
27......	406.32	408.02	406.52	405.12	404.52	404.32	403.72	403.72	403.72	404.32	404.32	404.52
28......	406.22	407.02	406.82	405.12	404.52	404.32	403.72	403.72	403.72	404.12	404.32	404.52
29......	405.92	......	406.22	405.12	404.52	404.12	403.72	403.72	403.72	404.12	404.32	404.32
30......	405.82	......	406.12	405.12	404.52	404.12	403.72	403.72	403.72	404.12	404.12	404.42
31......	405.72	......	406.12	......	404.52	......	403.72	403.72	......	404.12	......	404.52

ONONDAGA CREEK.

DESCRIPTION.

Onondaga lake receives the drainage from two principal tributaries, Onondaga creek and Otisco lake outlet, or Nine-Mile creek. The lake is drained by a short outlet about one mile in length, entering Seneca river at Mud Lock. The outlet was formerly improved by the State for the purpose of draining lands adjoining the lake and reducing the flood level. The fall from the foot of the lake to Seneca river is very slight. The stage is affected by a growth of aquatic plants so that the discharge from the outlet is apparently not a direct function of the stage. The stage of the lake is also affected by the stage of Seneca river. It is stated that floods in Onondaga lake usually recede before the maximum stage of Seneca river, so that at times the current in the outlet is reversed and water flows from the river into the lake. A detailed description of the drainage basin, with results of current-meter measurements made in the outlet, may be found in the report of the State Engineer and Surveyor for 1904, pages 494–501.

ONONDAGA CREEK AT TEMPLE ST., SYRACUSE, N. Y.

A gaging station was established on Onondaga creek at Temple street bridge, Syracuse, by Guy Moulton, for this Department, January 16, 1908. The elevation of water-surface when the gage reads zero is 376.11. Observations are taken each morning and night by L. Moulton. Current-meter measurements have been made from the bridge by the Syracuse Intercepting Sewer Commission.

The results are furnished for publication by courtesy of Mr. Glenn D. Holmes, Chief Engineer of the Commission.

Mean Daily Discharge, Second-feet, of Onondaga Creek at Temple St., Syracuse, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1......	39	86	1,737	165	*78	79	43	59	55	51	59	153
2......	*41	74	1,279	158	88	89	55	42	48	*49	65	145
3......	39	99	816	*150	122	122	*58	39	56	57	70	123
4......	37	86	598	127	143	143	55	36	*43	56	60	132
5......	39	78	566	131	114	*113	56	36	45	71	75	120
6......	41	*66	*555	116	110	110	45	42	77	90	*80	77
7......	41	71	945	124	105	105	41	*39	197	70	84	85
8......	40	78	730	122	*74	75	40	36	180	51	86	100
9......	*43	92	470	119	80	80	40	36	156	*54	100	100
10......	45	95	326	*123	88	88	*41	40	123	49	110	77
11......	42	91	296	131	86	87	42	42	*102	47	202	90
12......	47	84	302	139	84	*84	43	37	94	42	187	109
13......	45	*88	*255	134	80	81	65	40	78	89	*155	104
14......	43	84	322	142	80	78	55	*39	76	46	132	118
15......	42	86	255	142	*74	95	43	36	57	75	105	103
16......	*44	80	242	134	68	88	41	40	48	*53	90	92
17......	43	85	197	*151	66	90	*42	48	45	84	79	85
18......	86	95	200	147	84	85	40	45	*52	74	80	94
19......	112	87	199	140	70	*75	43	70	41	47	123	105
20......	110	*116	*289	123	56	74	42	39	53	55	*110	111
21......	120	91	330	100	82	65	45	*44	92	66	112	107
22......	175	87	253	122	*112	60	66	36	72	75	117	116
23......	*392	88	240	92	173	56	48	56	45	*92	115	105
24......	272	103	235	*88	186	58	*42	66	47	77	107	91
25......	145	96	253	110	250	54	26	69	*43	80	91	101
26......	74	100	210	99	262	*70	46	67	56	58	98	83
27......	140	*140	*180	99	135	56	45	50	48	99	*108	89
28......	110	1,354	177	94	120	49	44	*53	50	96	116	103
29......	94	......	173	78	*110	50	40	37	46	94	151	115
30......	*81	......	176	68	121	49	32	45	49	*54	180	147
31......	110	......	168	......	101	......	*47	47	......	56	......	176
Mean...	88	135	418	122	110	80	46	46	72	66	108	108

NOTE.— This table repeats and supplements that published on page 411 of the State Engineer's report for 1910.
* Sunday.

Mean Daily Discharge, Second-feet, of Onondaga Creek at Temple St., Syracuse, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1911.											
1............	856	210	186	366	174	109	95	88	......	......	117
2............	982	194	230	......	301	113	......	98	......	105	117
3............	......	145	145	283	252	105	72	......	......	104	117
4............	......	194	195	315	182	......	......	78	......	100	115
5............	255	275	193	542	174	125	65	73	......	70	......
6............	260	157	185	1,405	181	117	58	32	......	91	112
7............	256	174	130	860	......	117	55	62	......	85	120
8............	225	166	126	697	150	105	63	80	......	......	110
9............	260	181	181	......	132	100	......	66	......	159	110
10............	185	166	245	514	146	90	50	90	......	127	220
11............	193	174	260	428	135	......	58	80	......	96	140
12............	333	145	......	385	130	95	53	82	......	98	......
13............	239	206	425	353	130	145	50	......	......	107	......
14............	255	157	436	322	......	93	52	53	......	110	130
15............	366	156	476	375	123	100	52	107	......	......	117
16............	190	132	410	......	132	95	......	70	......	98	108
17............	181	156	221	321	130	95	167	77	......	73	110
18............	190	428	273	285	121	......	133	101	......	......	112
19............	181	355	224	260	120	90	122	52	......	138	......
20............	159	245	251	262	138	80	100	......	......	109	177
21............	185	205	317	240	......	83	110	105	110	107	163
22............	196	192	310	239	112	77	118	79	98	......	138
23............	112	183	462	......	112	80	......	65	115	111	126
24............	131	186	310	260	120	65	......	45	......	122	131
25............	150	177	222	225	137	......	50	90	114	121	185
26............	115	......	298	203	110	72	201	107	117	234	......
27............	209	394	785	193	100	122	62	......	130	125	165
28............	489	252	1,630	181	......	134	82	80	82	88	132
29............	239	......	647	180	85	152	60	143	160	......	156
30............	195	......	473	167	86	105	......	115	134	151	138
31............	180	......	419	......	85	......	82	......	......	166	......
Mean.......	269	208	355	370	141	102	84	85	118	116	134

Monthly Discharge of Onondaga Creek at Temple St., Syracuse, N. Y.
[Drainage area, 108 square miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	392	37	88	0.815	0.940
February	1,354	66	135	1.250	1.300
March	1,737	168	418	3.870	4.460
April	165	68	122	1.130	1.260
May	262	56	110	1.020	1.180
June	143	49	80	0.741	0.827
July	66	26	46	0.426	0.491
August	70	36	46	0.426	0.491
September	197	41	72	0.667	0.744
October	99	42	66	0.611	0.704
November	202	59	108	1.000	1.120
December	176	77	108	1.000	1.150

NOTE.— This table repeats and supplements that published on page 411 of the State Engineer's report for 1910.

Monthly Discharge of Onondaga Creek at Temple St., Syracuse, N. Y.
[Drainage area, 108 miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	982	112	269	2.490	2.870
February	394	145	208	1.930	2.010
March	1,630	126	355	3.290	3.790
April	1,405	167	370	3.430	3.830
May	301	85	141	1.310	1.510
June	152	65	102	0.944	1.050
July	201	50	84	0.778	0.897
August	143	32	85	0.787	0.907
September	....	....	....	....	....
October	234	70	116	1.070	1.230
November	220	108	134	1.240	1.380
December	....	....	....	....	....

SENECA RIVER.

SENECA RIVER AT BALDWINSVILLE, N. Y.

This station was established November 12, 1898, by Geo. W. Rafter, for the U. S. Deep Waterways Commission. It is maintained by U. S. Geological Survey in coöperation with this Department. The gaging station is located at the State dam in Baldwinsville, 12.5 miles along river from the junction of Seneca river with Oneida river. These two streams unite at Three River Point to form Oswego river.

The location of the gaging station is shown on the Baldwinsville sheet, United States Geological Survey topographic map.

Gage readings in the river channel below the dam are utilized to determine the average working head on turbines. Discharge through the three main canals is determined from records of the run of water-wheels, kept in each mill, and from the recorded lockage and opening of paddles at the Oswego canal lock at the foot of the canal.

Current-meter measurements, to determine the leakage of the several mills, have been made from time to time.

During 1909 the masonry State dam on Seneca river at Baldwinsville was changed by the addition of a concrete crest of ogee form, also by the addition of a steel segmental sluice gate at the left-hand end of the dam. A new profile of the dam has been obtained and a discharge table prepared therefrom for the new conditions.

Records for 1909, 1910 and 1911 are not available for publication.

SKANEATELES LAKE AND OUTLET.

Skaneateles lake outlet enters Seneca river above Cross lake, crossing the Erie canal at Jordan. The fall from the foot of the lake at this point is 465 feet.

The surface of the lake has an elevation of 865 feet above tide. The valley on each side of the lake has an average width of 2.5 miles, and in this distance there is a rise of 400 to 800 feet, the greater part of it being within a mile of the lake. The inflow to the lake is through numerous short lateral feeders flowing down these slopes. The drainage areas of the lake are shown below:

*Drainage areas of Skaneateles Lake.**

	Square miles.
Land surface above State dam at Skaneateles	**60.25**
Water surface of lake at Skaneateles	**12.75**
Total drainage area above foot of lake (water surface = 17.46 per cent)	**73.00**
Total area above Willow Glen weir	**74.25**
Area above Erie canal at Jordan	**93.00**

*** Areas here given have been taken from proceedings in condemnation of water-powers on Skaneateles outlet. The lake and its tributary area are shown on the Skaneateles, Tully, Cortland and Moravia topographic atlas sheets of the United States Geological Survey.**

SKANEATELES OUTLET AT WILLOW GLEN, N. Y.

The station was established March 10, 1895. It is located in the village of Willow Glen, 1.5 miles below the foot of Skaneateles lake.

Observation is made of the daily discharge over a thin-edged weir, having a crest length of 27 feet, with two end contractions. The discharge is calculated from the observed depth on a stake set with its top at crest level, 5.2 feet upstream from the weir, by means of the Francis formula, including corrections for end contractions and velocity of approach.

Since July 1, 1894, the water-supply of the city of Syracuse has been drawn from Skaneateles lake, and the amount of this diversion should be added to the discharge over Willow Glen weir to obtain the total run-off of the drainage basin. The calculated diversion, as determined from the record of gate openings and head of the inlet gates, using the formula for orifices with a constant coëfficient stated as 0.62 has been furnished by the city of Syracuse. The observations at the weir and gates were taken by Edward Conron.

A complete description of earlier gagings of this stream is contained in the report of the State Engineer of New York, supplement for 1902, pages 61–76.

Records for 1909, 1910 and 1911 are not available for publication.

SENECA RIVER.

SENECA RIVER BELOW LOCK NO. 6 AT SENECA FALLS, N. Y.

The gage was established on Seneca river below Seneca Falls on November 16, 1909, by L. S. Hulburd for this Department. The gage consist of a 5-ft. enameled steel section, fastened to a pile near the right-hand, downstream bank just above the State weir at Seneca Falls. The elevation of the zero mark of the gages is 391.41, Barge canal datum. The weir is utilized to calculate the discharge of the river at this point. The small quantity of water which is diverted around the dam by leakage through the flume of an abandoned water power has been measured and is included in the estimated flow. An estimate of the quantity of

water used for canal purposes is also made from a record of the operation of the adjacent locks. The channel of approach above the weir is shallow and irregular and is obstructed by ice in the winter season. The crest of the dam is also somewhat irregular and flash-boards are usually maintained thereon. Owing to these conditions the estimate of discharge cannot be made as precise as is desired and the record is published as approximate only and is subject to revision.

Current-meter Discharge Measurements of Seneca River at Rumsey St. Bridge, Seneca Falls, N. Y.

DATE.	Hydrographer.	Gage Reading. Beginning.	Gage Reading. Ending.	Gage Reading. Mean.	Meter No.	Lateral interval.	Submergence depth.	Total area.	Computed discharge.	Velocity correction factor.	Corrected discharge.
1911.						*Feet.*		*Sq. ft.*	*Sec.-ft.*		*Sec.-ft.*
Dec. 15	Barrett and Fogarty	2.70	2.70	2.70	462	10	0.6	857	376	1.00	376
Dec. 20	Duschak..........	2.70	2.70	2.70	462	10	0.6	887	368	1.00	368

Mean Daily Discharge, Second-feet, of Seneca River below Lock No. 6, at Seneca Falls, N. Y.

1909.	Nov.	Dec.
1	......	559
2	......	559
3	......	569
4	......	598
5	......	444
6	......	578
7	......	549
8	......	559
9	......	578
10	......	559
11	......	529
12	......	444
13	......	529
14	......	588
15	......	578
16	......	598
17	......	578
18	578	529
19	618	426
20	520	539
21	444	463
22	539	374
23	520	391
24	539	409
25	491	232
26	520	225
27	463	426
28	444	409
29	559	374
30	578	391
31	......	409
Mean	524	484

NOTE.— This table supersedes that published on page 416 of the State Engineer's report for 1910.

Mean Daily Discharge, Second-feet, of Seneca River below Lock No. 6, at Seneca Falls, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1......	400	660	692	801	454	549	365	454	501	549	501	857
2......	240	660	......	801	549	549	409	454	454	501	409	801
3......	374	660	......	639	598	454	285	454	454	549	409	801
4......	308	628	767	745	756	454	247	454	454	549	409	639
5......	598	618	702	745	649	454	365	454	501	549	454	745
6......	454	316	409	745	549	549	454	409	549	549	365	745
7......	463	880	463	745	549	549	454	324	549	549	454	745
8......	559	745	501	745	549	454	454	454	549	549	409	745
9......	444	639	426	745	549	454	409	454	454	454	501	745
10......	454	463	400	745	549	454	365	454	454	501	454	539
11......	520	588	409	692	549	454	365	454	365	549	409	203
12......	426	539	559	692	549	454	409	454	454	549	409	400
13......	444	444	660	692	549	454	324	454	454	454	365	588
14......	473	559	681	692	549	454	365	365	501	501	454	588
15......	426	539	649	692	501	365	365	454	454	501	501	692
16......	277	559	692	745	549	365	409	454	454	501	409	639
17......	463	539	692	692	549	365	365	501	501	501	454	692
18......	463	539	692	745	549	285	454	454	454	501	454	203
19......	435	501	692	745	549	247	409	409	454	501	454	588
20......	444	400	713	801	549	324	454	409	501	549	409	539
21......	559	588	713	801	454	501	409	365	454	549	365	491
22......	529	588	767	801	365	454	409	454	454	501	409	491
23......	444	569	767	801	549	365	549	454	454	454	......	539
24......	598	444	778	745	549	409	756	501	501	......	539	491
25......	660	277	745	702	598	365	598	501	454	......	745	......
26......	649	277	745	549	549	365	409	549	501	......	692	......
27......	660	444	......	549	549	365	454	454	501	......	539	444
28......	660	444	......	549	501	409	454	409	549	501	745	491
29......	702	......	745	501	454	409	365	454	549	454	857	588
30......	501	......	857	549	549	365	409	454	501	454	857	539
31......	649	......	857	......	501	......	409	501	......	501	......	539
Mean...	493	540	658	706	542	423	418	447	481	512	498	590

NOTE.— This table supersedes that published on page 416 of the State Engineer's report for 1910.

Mean Daily Discharge, Second-feet, of Seneca River below Lock No. 6, at Seneca Falls, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	*316	588	491	745	1,095	745	857	......	1,095	*745	973	857
2......	745	801	491	*639	1,095	801	*639	......	857	857	857	973
3......	745	745	491	639	1,034	745	857	......	*857	857	973	*973
4......	639	639	357	801	1,034	*539	639	745	857	973	857	639
5......	745	*277	*	1,419	1,034	745	857	639	857	745	*639	491
6......	857	357	444	1,095	973	745	857	*639	973	857	857	539
7......	588	444	357	1,158	*973	801	915	692	745	745	973	491
8......	*539	444	357	1,034	973	801	915	745	973	*973	973	444
9......	639	491	400	*857	1,034	801	*692	801	857	745	745	539
10......	588	539	973	1,095	1,034	801	915	639	*973	973	973	*857
11......	588	444	316	1,095	973	*539	915	639	973	973	857	639
12......	692	*	*539	1,034	1,034	857	915	692	973	857	*857	444
13......	973	444	539	1,095	1,034	857	801	*639	745	973	973	491
14......	801	539	539	1,034	*745	745	915	692	857	745	745	539
15......	*	539	639	1,095	1,034	801	857	745	973	*857	857	639
16......	444	588	......	*973	1,034	857	*692	692	857	973	973	588
17......	639	588	444	1,034	1,034	857	857	801	*745	857	973	*539
18......	639	539	491	1,095	1,034	*639	915	801	857	857	857	491
19......	539	*203	*277	1,034	915	857	915	801	745	857	*857	588
20......	639	539	316	1,034	857	915	915	*639	973	973	973	491
21......	745	444	491	1,034	*745	801	973	692	857	857	857	588
22......	*357	444	357	1,095	915	801	915	857	857	*745	973	639
23......	745	539	444	*1,095	801	915	*745	915	745	857	973	588
24......	745	444	357	1,095	857	801	973	973	*692	973	857	*539
25......	539	491	444	1,158	857	*692	973	1,095	857	745	973	491
26......	444	*277	*277	1,034	801	915	1,095	973	973	852	*973	588
27......	588	745	857	1,034	745	915	973	*973	857	745	857	639
28......	745	745	745	1,095	*588	857	1,034	1,095	745	745	857	539
29......	*240	......	539	973	692	915	745	973	973	*539	973	588
30......	692	......	588	*973	539	857	*745	973	973	745	973	539
31......	639	......	539	......	692	......	857	1,095	......	745	......	*444
Mean...	628	514	486	1,020	910	797	867	809	876	837	900	595

* Sunday.

Monthly Discharge of Seneca River below Lock No. 6, at Seneca Falls, N. Y.
[Drainage area, 780 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1909.					
December	598	225	484	0.621	0.647
1910.					
January	702	240	493	0.632	0.729
February	880	277	540	0.692	0.721
March	857	400	658	0.844	0.973
April	801	501	706	0.905	1.010
May	756	365	542	0.695	0.801
June	549	247	423	0.542	0.605
July	756	247	418	0.536	0.618
August	549	324	447	0.573	0.661
September	549	365	481	0.617	0.688
October	549	454	512	0.656	0.756
November	857	365	498	0.638	0.712
December	857	203	590	0.756	0.872

NOTE.— This table supersedes that published on page 417 of the State Engineer's report for 1910.

Monthly Discharge of Seneca River below Lock No. 6, at Seneca Falls, N. Y.
[Drainage area, 780 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	973	240	628	0.805	0.928
February	801	203	514	0.659	0.686
March	857	277	486	0.623	0.718
April	1,419	639	1,020	1.310	1.460
May	1,095	539	910	1.160	1.340
June	915	539	797	1.020	1.140
July	1,095	639	867	1.110	1.280
August	1,095	639	809	1.040	1.200
September	1,095	692	876	1.120	1.250
October	973	539	837	1.070	1.230
November	973	639	900	1.150	1.280
December	973	444	595	0.763	0.880

CLYDE RIVER.

DESCRIPTION.

Clyde river joins Seneca river in the Montezuma marsh near the foot of Cayuga lake. Clyde river is formed by the junction of Canandaigua outlet and Ganargua creek, at Lyons. Its total length is about 20 miles and the greater portion of its course lies through a broad, marshy valley. Ganargua creek proper rises near Victor. Its course is northeasterly to Macedon. It then

flows easterly, winding broadly through the system of duplicate valleys extending easterly from Macedon. The principal tributary of Ganargua creek is Mud creek, which rises in the hilly region near the head of Canandaigua lake and flows northward about 20 miles, entering Ganargua creek at Victor. Ganargua creek is often called Mud creek throughout its course to Lyons. The valley through which it flows is, however, called Ganargua valley. The tributary drainage is of the characteristic glacial kame type and the tributaries are rather sparse, flowing oftentimes first north and then south between elongated hills, until they find their way to Ganargua creek.

CLYDE RIVER AT CLYDE, N. Y.

A gage was established at Sodus street bridge in the village of Clyde, October 20, 1905, by E. V. R. Payne, of this Department. A gage of the box-and-chain type is used. The scale is divided decimally from zero to 8 feet. The elevation of water-surface, when the gage reads zero, is 380.00. The gage is located on the downstream side of the central span of the bridge. The bridge has a total length between abutments of 174 feet. It is subdivided into 5-foot sections on the downstream side for current-meter measurements, the initial point being the face of the right-hand abutment. Readings are taken each day. It has been impossible to compute the discharge for 1910 and 1911, owing to the changed channel conditions due to Barge canal construction.

CLYDE RIVER AT LYONS, N. Y.

A gage was established at Geneva street bridge in the village of Lyons, September 25, 1905, by this Department. The gage is of the weight-and-box type and is attached to the downstream side of the bridge on the right-hand span. The gage is divided decimally from zero to 14 feet. The elevation of the water-surface, when the gage reads zero, equals 390.00. Standard chain length, 18.85. Readings are taken at 1 P. M. each day by men from the Barge canal office at Lyons. The gage is located below the inflow of Canadaigua outlet. The downstream side of the bridge is subdivided at 5-foot intervals for current-meter measurements, the initial point being the face of the left-hand abutment.

The current-meter measurements available have enabled a fairly constant rating curve to be prepared for this station. The stream does not freeze over very extensively and the open water rating table has been applied in so far as seemed practicable throughout the year. The stream is more or less obstructed by aquatic vegetation at times in the summer, and the flow during the low-water season as estimated from the regular rating curve is probably less reliable than the calculated discharges for higher stages of the stream.

The bridge has two spans and extends squarely across the stream. The channel of the river is straight in the vicinity of the gage and the current is moderate and nearly uniform at ordinary stages and is confined to the main channel at nearly all stages. The Erie canal runs parallel with the Clyde river both at Clyde and at Lyons and the Clyde river receives some waste water from the canal.

Owing to changed channel conditions, due to Barge canal construction, it has been impossible to compute the discharge at this station for 1911.

Current-meter Discharge Measurement of Clyde River at Lyons, N. Y.

DATE.	Hydrographer.	Gage Reading. Beginning.	Gage Reading. Ending.	Gage Reading. Mean.	Meter No.	Lateral inter-val.	Sub-mer-gence depth.	Total area.	Com-puted dis-charge.	Velocity cor-rection factor.	Cor-rected dis-charge.
1911.						*Feet.*		*Sq. ft.*	*Sec.-ft.*		*Sec.-ft*
June 16	A. R. Patchke.....	1.87	1.80	1.84	559	5	0.6	217	130	.978	127

Current-meter Discharge Measurements of Ganarqua Creek at Lyons, N. Y.

DATE.	Hydrographer.	Gage Reading. Beginning.	Gage Reading. Ending.	Gage Reading. Mean.	Meter No.	Lateral inter-val.	Sub-mer-gence depth.	Area flow-ing.	Total area.	Com-puted dis-charge.	Velocity cor-rection factor.	Cor-rected dis-charge.
1911.						*Feet.*		*Sq. ft.*	*Sq ft.*	*Sec.-ft.*		*Sec.-ft.*
June 15	A. R. Patchke.	396.2	396.2	396.2	559	5	0.6	45.4	45.4	116	1.00	116
June 15	A. R. Patchke.	396.2	396.2	396.2	559	5	0.6	42.4	42.4	105	1.00	105
June 16	A. R. Patchke.	396.1	396.1	396.1	559	2.5	0.6	42.3	42.3	99.9	1.00	99.9
June 17	A. R. Patchke.	396.97	396 92	396.94	559	5	0.6	......	63.3	161	1.00	161
June 17	A. R. Patchke.	396.90	396.82	396.86	559	5	0.6	......	62.5	160	1.00	160
June 18	A. R. Patchke.	396.00	395.98	395.99	559	5	0.6	42.3	42.3	90.9	1.00	90.9

Current-meter Discharge Measurement of Ganargua Creek at Newark, N. Y.

DATE.	Hydrographer.	Gage Reading. Beginning.	Ending.	Mean.	Meter No.	Lateral interval.	Submergence depth.	Total area.	Computed discharge.	Velocity correction factor.	Corrected discharge.
						Feet.		*Sq. ft.*	*Sec.-ft.*		*Sec.-ft.*
1911. July 22	R. N. Barrett......	1.59	1.60	1.60	462	5	0.6	280	51.4	1.00	51.4

CANANDAIGUA OUTLET.

DESCRIPTION.

Canandaigua lake occupies one of the elongated depressions extending in nearly a north and south direction in the central lake region of New York. The drainage tributary to the lake is chiefly short lateral streams from the steep slopes of adjacent hillsides. The outflow from the lake is regulated to some extent by gates. The lake is at elevation about 686. From the foot of the lake at Canandaigua the outlet flows a little north to Manchester, a distance of 7 miles. In this distance a fall of 100 feet occurs, which is chiefly concentrated at several water-power dams. From Manchester the stream flows easterly 12 miles and thence northeasterly 8 miles, joining Ganargua creek at Lyons to form the Clyde river. In the easterly portion of its course the stream winds with large bends through a broad sloping valley of fertile land. The fall is mostly utilized at water-power dams. The tributary drainage is moderately rolling and is interspersed with glacial kames. These are lenticular hills extending usually in a north and south direction. At Phelps, Flint creek, which is the largest tributary, enters the outlet. Flint creek drains a valley similar to the adjacent lake basins. This valley is not at present occupied by a lake, but contains an extensive swamp, reaching several miles southward from Gorham.

CANANDAIGUA OUTLET AT ALLOWAY, N. Y.

This gaging station was established September 18, 1906, by F. P. Williams for this Department. It is located at a highway bridge crossing the stream 2½ miles above Lyons. The gage has

a vertical scale divided decimally and reading from zero to 10 feet. It is attached to the downstream face of the left-hand abutment of the bridge and has its zero mark at elevation 403.32. Current-meter discharge measurements are made from the downstream side of the bridge, which has a span of 95 feet between abutments.

Current-meter Discharge Measurements of Canandaigua Outlet at Alloway, N. Y.

DATE.	Hydrographer.	GAGE READING. Beginning.	Ending.	Mean.	Meter No.	Lateral interval.	Submergence depth.	Total area.	Computed discharge.	Velocity correction factor.	Corrected discharge.
1911.						*Feet.*		*Sq. ft.*	*Sec.-ft.*		*Sec.-ft.*
June 14	A. R. Patchke.....	1.18	1.13	1.16	559	5	0.6	231	180	1.00	180
June 16	A. R. Patchke.....	1.12	1.09	1.10	559	5	0.6	225	161	1.00	161
June 18	A. R. Patchke.....	0.85	0.95	0.90	559	5	0.6	209	123	1.00	123
June 18	A. R. Patchke.....	1.02	1.04	1.03	559	5	0.6	220	161	1.00	161

Mean Daily Discharge, Second-feet, of Canandaigua Outlet at Alloway, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	*258	559	946	747	498	258	158	76	76	*114	136	207
2.....	284	468	907	*632	468	258	*183	114	76	93	114	183
3.....	828	440	788	498	468	258	258	93	*76	76	114	*114
4.....	559	412	670	468	440	*258	232	76	76	76	136	136
5.....	468	*498	*670	*a*	412	258	183	76	76	76	*207	207
6.....	498	526	670	*a*	386	258	136	*76	76	76	183	183
7.....	526	412	670	*a*	*360	258	114	93	114	76	158	183
8.....	*440	412	670	1,024	360	258	114	114	114	*76	207	207
9.....	412	360	670	*907	360	258	*114	114	158	114	207	207
10.....	412	336	*a*	907	360	258	114	93	*158	114	207	*207
11.....	360	310	946	788	360	*258	114	76	114	114	158	207
12.....	258	*310	*1,024	747	360	258	114	76	114	158	*158	207
13.....	310	310	*a*	632	360	258	114	*76	76	183	158	232
14.....	336	284	1,060	526	*360	258	76	76	76	207	158	258
15.....	*468	258	1,060	526	310	258	76	114	76	*207	158	258
16.....	440	258	946	*526	310	258	*76	93	76	207	183	258
17.....	412	284	828	498	310	258	158	76	*76	207	207	*258
18.....	360	*a*	747	468	336	*195	207	114	76	207	207	258
19.....	310	**a*	*632	468	360	207	158	158	76	207	*207	207
20.....	360	*a*	526	468	360	183	136	*93	76	158	183	207
21.....	360	907	468	468	*336	158	114	76	76	183	158	258
22.....	*360	708	526	468	310	207	114	76	76	*207	158	258
23.....	360	594	498	*498	310	207	*114	76	76	183	158	310
24.....	360	594	440	526	310	183	114	76	*76	158	158	*360
25.....	360	526	498	468	310	*158	114	76	76	207	158	336
26.....	594	*788	*594	468	258	183	93	76	76	207	*183	310
27.....	828	*a*	907	412	258	207	76	*76	76	207	207	258
28.....	788	*a*	1,024	412	*258	207	76	76	76	158	207	258
29.....	*670	......	788	412	258	158	76	76	76	*158	207	207
30.....	632	......	747	*412	258	158	*76	76	76	158	158	232
31.....	594	......	747	......	258	......	76	76	......	158	......	*258
Mean...	458	459	747	569	344	227	125	88	87	153	173	233

* Sunday. *a* No record.

Monthly Discharge of Canandaigua Outlet at Alloway, N. Y.
[Drainage area, 440 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	828	258	458	1.040	1.200
February	*a* 907	258	459	1.040	1.080
March	*a* 1,060	440	747	1.700	1.960
April	*a* 1,024	412	569	1.290	1.440
May	498	258	344	0.782	0.902
June	258	158	227	0.516	0.576
July	258	76	125	0.284	0.327
August	158	76	88	0.200	0.231
September	158	76	87	0.198	0.221
October	207	76	153	0.348	0.401
November	207	114	173	0.393	0.438
December	360	114	233	0.530	0.611

a Actual maximum above limits of rating curve.

FLINT CREEK DRAINAGE BASIN.

DESCRIPTION.

Flint creek is a tributary to Canandaigua outlet, entering the outlet at Phelps. Flint creek rises in northern Steuben county near the junction of the Ontario, Yates and Steuben county lines. It flows in general northeasterly, having a total length of 35 miles. The drainage basin is relatively long and narrow, and the stream valley above Gorham, about 14 miles from the mouth, comprises a deep narrow valley bordered by steep and in some cases precipitous slopes, the bottom of the valley being relatively flat and having an average width of about one mile. The elevation of the valley is about 880 feet above tide. This valley is intermediate between and nearly parallel with Keuka and Canandaigua lakes, and it is apparently an unoccupied lake bottom of the finger lake series. Between the villages of Potter and Gorham the bottom of the valley is occupied by an extensive marsh, having a length of about 8 miles and an average width of one mile. Flint creek enters the head of this marsh at Potter and leaves the marsh at Gorham. Short lateral tributaries enter the marsh from the steep side slopes. The marsh is largely timber covered. There is a water-power dam at Gorham, which controls the level of Flint creek at the outlet from the marsh. Power is developed for small mills at Orleans, Flint, Stanton and other places. Above the head of

Gorham marsh the sides of the stream valley rise to a height of 800 to 1,000 feet above the stream. The valley slopes are generally round and not serrated as in the case of most of the other slopes bordering finger lake valleys and there are but few permanent tributaries to upper Flint creek.

FLINT CREEK AT PHELPS, N. Y.

A gaging station was established on Flint creek at a private highway bridge located about one-quarter mile south of Phelps Junction, on August 5, 1910, by J. P. Newton for this Department. The observer is Edward Fitzgerald. Readings are taken each morning and night from a standard weight-and-chain gage located on the downstream side of the bridge. The stream channel is fairly straight and uniform above and below the gage, but the bed of the stream is rock and contains some loose boulders, especially near the margins of the stream.

Current-meter measurements are made by wading or from the downstream side of the bridge, according to the condition of the stream.

The datum of the gage is referred to an arbitrary bench-mark, elevation 100.00, on the downstream side of the right-hand abutment. The elevation of water-surface, when the gage reads zero, is 95.86.

Current-meter Discharge Measurements of Flint Creek at Phelps, N. Y.

DATE.	Hydrographer.	Gage Reading. Beginning.	Gage Reading. Ending.	Gage Reading. Mean.	Meter No.	Lateral interval.	Submergence depth.	Total area.	Computed discharge.	Velocity correction factor.	Corrected discharge.
						Feet.		*Sq. ft.*	*Sec.-ft.*		*Sec.-ft.*
1911. June 14	A. R. Patchke.....	1.23	1.23	1.23	559	2.5	0.6	42.5	18.1	1.00	18.1

CANANDAIGUA LAKE.

CANANDAIGUA LAKE AT CANANDAIGUA, N. Y.

A gaging station was established by A. T. Clark for this Department, September 10, 1909, at the foot of Canandaigua lake in the village of Canandaigua. The gage consists of two 5-foot enameled steel sections, reading to feet and tenths, attached verti-

cally to dock piling at the shore end of the boat-house pier near the lake outlet. The zero mark of the gage has not been determined with reference to Barge canal datum. This gage is read twice each day and shows the water-level in Canandaigua lake.

Mean Daily Gage Height, in Feet, of Canandaigua Lake at Canandaigua, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	4.7	5.2	6.1	7.0	7.2	6.7	6.4	5.9	5.8	5.9	5.7	5.5
2.....	4.7	5.2	6.1	7.0	7.1	6.7	6.4	5.9	5.8	5.9	5.7	5.5
3.....	4.7	5.2	6.1	7.0	7.1	6.7	6.4	5.9	5.9	6.0	5.7	5.5
4.....	4.8	5.2	6.1	7.0	7.1	6.7	6.3	5.9	5.9	6.0	5.7	5.5
5.....	4.8	5.6	6.1	7.0	7.1	6.7	6.3	5.9	5.9	6.0	5.7	5.5
6.....	4.8	5.6	6.1	7.0	7.0	6.7	6.3	5.9	5.9	6.0	5.7	5.5
7.....	4.8	5.6	6.1	7.1	7.0	6.7	6.3	5.9	5.9	6.0	5.7	5.5
8.....	4.8	5.8	6.2	7.1	7.0	6.8	6.3	5.9	6.0	6.0	5.7	5.5
9.....	4.8	5.8	6.2	7.2	7.0	6.8	6.3	5.8	6.0	6.0	5.6	5.4
10.....	4.8	5.8	6.2	7.2	7.0	6.8	6.2	5.8	6.0	6.0	5.6	5.4
11.....	4.8	5.8	6.3	7.2	7.0	6.8	6.2	5.8	6.0	6.0	5.6	5.4
12.....	4.9	5.8	6.3	7.2	7.0	6.8	6.2	5.8	6.0	6.0	5.6	5.4
13.....	4.9	5.8	6.4	7.2	6.9	6.8	6.2	5.8	6.0	6.0	5.6	5.5
14.....	4.9	5.9	6.4	7.2	6.9	6.8	6.2	5.8	6.0	6.0	5.6	5.5
15.....	4.9	5.9	6.4	7.2	6.9	6.7	6.2	5.8	6.0	6.0	5.5	5.5
16.....	4.9	5.9	6.4	7.2	6.9	6.7	6.1	5.8	6.0	6.0	5.5	5.5
17.....	4.9	6.0	6.4	7.2	6.9	6.7	6.1	5.8	6.0	6.0	5.5	5.5
18.....	4.9	6.0	6.6	7.2	6.9	6.7	6.1	5.8	6.0	6.0	5.5	5.6
19.....	4.9	6.0	6.6	7.2	6.9	6.6	6.1	5.8	6.0	6.0	5.5	5.6
20.....	4.9	6.0	6.6	7.2	6.9	6.6	6.1	5.8	6.0	6.0	5.5	5.6
21.....	5.0	6.0	6.7	7.2	6.9	6.6	6.1	5.8	6.0	5.9	5.5	5.6
22.....	5.0	6.0	6.7	7.2	6.8	6.6	6.1	5.8	5.9	5.9	5.5	5.6
23.....	5.0	6.0	6.7	7.2	6.8	6.5	6.1	5.8	5.9	5.9	5.5	5.6
24.....	5.0	6.1	6.7	7.2	6.8	6.5	6.1	5.7	5.9	5.9	5.5	5.7
25.....	5.0	6.1	6.7	7.2	6.8	6.5	6.0	5.7	5.9	5.9	5.5	5.7
26.....	5.0	6.1	6.7	7.2	6.8	6.5	6.0	5.7	5.9	5.9	5.5	5.7
27.....	5.1	6.1	6.7	7.2	6.8	6.5	6.0	5.7	5.9	5.8	5.5	5.7
28.....	5.1	6.1	6.9	7.2	6.8	6.5	6.0	5.8	5.9	5.8	5.5	5.7
29.....	5.1	......	6.9	7.2	6.8	6.4	6.0	5.8	5.9	5.8	5.5	5.8
30.....	5.1	......	6.9	7.2	6.8	6.4	6.0	5.8	5.9	5.8	5.5	5.8
31.....	5.1	......	6.9	......	6.8	......	6.0	5.8	......	5.8	......	5.8

IRONDEQUOIT CREEK DRAINAGE BASIN.

DESCRIPTION.

Irondequoit creek is tributary to the Irondequoit bay about six miles east of Rochester. The drainage basin of the stream is shown on the Macedon, Rochester, Honeoye and Canandaigua quadrangles of the United States Geological Survey topographic maps. The head of the stream is in Mendon pond at elevation 662 above tide. The outlet from this pond flows southeasterly, turning to the north before it reaches Fishers village. The stream flows thence in a generally northerly direction, crossing the Erie canal between Pittsford and Bushnell's Basin. At Dispatch, Thomas creek, a large tributary, enters from the east. This tribu-

tary receives a considerable amount of waste and overflow waters from the Erie canal, with which it runs parallel for several miles.

The topography of Irondequoit creek drainage basin is generally broken and irregular. The surface soil is, as a rule, very sandy and there are numerous springs and a relatively large supply of ground water, which feeds the stream and maintains a relatively uniform flow. There are a number of undrained depressions in the drainage basin. Most of these do not contain lakes, the surface water-supply being disposed of by evaporation and infiltration. Aside from marshes surrounding Mendon ponds there are several small swamp areas. There are a number of small mills and water-power developments on the stream. A gaging station was maintained on this stream near Pittsford until December 31, 1910, when it was discontinued.

Drainage Areas of Irondequoit Creek.
(From U. S. G. S. Topographic Maps.)

LOCALITY.	AREA IN SQUARE MILES.	
	Place to place.	Total.
Irondequoit creek.		
Head to Mendon	21.89	21.89
Mendon to gaging station	19.77	41.66
Gaging station to Jaeske's mill *a*	7.96	49.62
Jaeske's mill to junction with Thomas creek	13.14	62.76
Thomas creek above mouth	34.15	96.91
Thomas creek to Allen creek	7.81	104.72
Allen creek above mouth	26.56	131.28
Allen creek to lower dam *b*	6.57	137.85
Lower dam to head of bay	13.72	151.57

a Erie canal crossing. *b* Two miles below Penfield.

GENESEE RIVER DRAINAGE BASIN.

GENESEE RIVER.

DESCRIPTION.

Genesee river rises in Potter county, Pa., eight or ten miles south of the New York-Pennsylvania boundary, flows northwestward for about thirty-two miles by general course, then turns to the northeast and empties into Lake Ontario, seven miles north of Rochester. The entire length of the stream, following bends, is about 135 miles, and the drainage area is about 2,450 square miles.

In the northern counties the surface is rolling, with long, easy slopes, except along the streams, which usually lie in deep ravines, hemmed in by steep banks. On the whole there is a gradual rise away from the lakes, and in the upper half of the basin the country becomes rough and is broken by ridges, the summits of which attain elevations of from 2,000 to 2,500 feet above tide.

In the thirty-nine miles between Belmont, in central Allegany county, and Portage, in southwestern Livingston county, the fall of the water-surface is 253 feet, an average of 6.4 feet per mile. At Portage the river plunges down in three magnificent falls, and thence nearly to Mount Morris flows at the bottom of a deep gorge. From Mount Morris to Rochester the valley is broad and open and the stream is bordered by meadows subject to occasional overflow. At Rochester there is another abrupt descent over three heavy falls, amounting to about 260 feet within the city.

The series of remarkable lakes tributary to the Oswego basin is continued westward into the basin of the Genesee and includes Conesus, Hemlock, Canadice, and Honeoye lakes. These lakes serve as natural reservoirs and have inlets draining considerable areas at their upper ends. The slopes adjacent to the lakes themselves are narrow and steep and are drained by gulleys and torrential brooks. The area below the lakes is rolling and the soil is rich and extensively cultivated. The areas and elevations of these lakes are shown in the following table:

Areas and Elevations of Lakes in Genesee River Basin. a

LAKE.	Elevation.	Water-surface area.	Drainage area.	Per cent water-surface.
	Feet.	*Square miles.*	*Square miles.*	
Hemlock lake	896	2.8	46.8	6.12
Canadice lake	1,092	0.7	12.6	5.57
Honeoye lake	800	2.5	39.6	6.41

a These lake basins are shown on the Honeoye, Canandaigua, Naples and Wayland topographic atlas sheets of the United States Geological Survey, from which the areas have been taken, with the exception of those for Hemlock and Canadice lakes, which are from surveys of Rochester water works.

Above all the private dams at Rochester the State formerly maintained a dam for diverting water to the Erie canal, and in the basin of Black creek, one of the upper tributaries of the Genesee from the west, are two reservoirs (Rockville and Cuba reservoirs), owned by the State, also used for the benefit of the Erie canal.

Cuba reservoir, on the Genesee-Allegheny divide, receives the drainage from a tributary area of 26.6 square miles. The storage volume is 454,000,000 cubic feet. The overflow from this reservoir enters Allegheny river. The storage water may be turned into the summit level of the abandoned Genesee Valley canal and thence into Genesee river.

Drainage Areas of Tributaries of Genesee River. a

NAME OF STREAM.	AREA IN SQUARE MILES.		
	Tributary.	GENESEE RIVER.	
		Above tributary.	Below tributary.
Cryder creek	43.3	99.9	143.2
Chenunda creek	30.0	181.0	210.0
Dyke's creek	68.3	214.0	282.3
Vandermark creek	21.6	301.3	322.9
Knight's creek	22.3	323.9	346.2
Phillips creek	32.3	372.8	405.1
Vancampens creek	55.7	410.4	466.1
Angelica creek	82.1	481.1	563.2
White creek	15.9	569.2	585.1
Black creek	31.1	595.5	626.6
Crawford creek	11.8	637.6	649.4
Caneadea creek	63.3	651.0	714.3
Cold creek	41.0	745.3	786.3
Rush creek	35.3	787.0	822.3
Wiscoye:			
East Coy creek	59.9	....	....
West Coy creek	48.7	833.6	942.2
Wolf creek	19.3	974.9	994.2
Silver Lake outlet	30.4	1,029.2	1,059.6
Coshaqua creek	82.0	1,059.6	1,141.6
Canaseraga creek	258.7	1,148.4	1,407.1
Beards creek	41.3	1,423.1	1,464.4
Conesus Lake outlet	88.8	1,555.5	1,643.9
Honeoye creek	262.6	1,675.9	1,938.5
Allen's creek	198.1	1,947.1	2,145.2
Black creek	211.8	2,168.5	2,380.0
Genesee river, total at mouth	....	....	2,445.6

a From an early report on Genesee river storage.

Water-surface Elevation Gages Maintained on Genesee and Niagara Rivers During the Year 1911

LOCATION.	Date established.	Observer.	Elevation of zero mark (B. C. datum).	Type of gage.	Subdivision of gage.	Readings taken to —
Genesee river — Rochester, Elmwood Ave......	Feb. 9, 1904	P. J. Slavin......	506.73	Staff........	$\frac{1}{10}$ foot.	$\frac{1}{10}$ foot.
Niagara river — Tonawanda..........	Jan. 23, 1905	Barge canal office employee......	560.00	Automatic, recording.		
Erie canal — Tonawanda, Deleware Ave.......	Jan. 23, 1905	Leo T. Cooley....	560.00	Staff........	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Pendleton, Change bridge.........	Jan. 30, 1905	Jacob Snell, Jr...	560.00	Chain.......	$\frac{1}{10}$ "	$\frac{5}{100}$ "

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Genesee River at Elmwood Ave., Rochester, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	510.93	510.33	511.33	509.93	508.93	508.03	508.03	508.03	508.53	507.83	508.13	509.33
2.....	511.53	509.73	510.43	509.63	509.03	508.03	508.03	508.03	508.23	507.93	508.23	509.23
3.....	512.33	509.43	509.93	509.53	509.23	508.03	508.03	508.03	508.23	509.03	508.23	508.93
4.....	513.43	509.43	509.53	509.53	509.33	508.03	508.03	508.03	508.23	509.03	508.23	508.73
5.....	512.03	509.23	509.43	510.93	509.03	508.03	507.93	508.03	508.23	508.83	508.23	508.63
6.....	510.53	509.13	509.13	513.63	508.83	508.23	507.93	508.03	508.23	509.23	508.23	508.63
7.....	509.43	509.33	508.83	513.23	508.73	508.23	507.93	507.93	509.23	508.83	508.23	508.53
8.....	509.43	509.23	508.63	513.33	508.63	508.23	508.13	507.93	509.53	510.53	508.33	508.53
9.....	509.43	509.13	508.83	511.53	508.53	508.33	508.43	507.93	509.53	509.63	509.33	508.53
10.....	509.53	509.03	508.83	511.13	508.53	508.13	508.43	507.83	509.13	508.93	508.93	509.13
11.....	509.53	508.83	511.03	510.73	508.33	508.03	508.43	507.83	508.53	508.73	508.63	509.13
12.....	509.53	508.73	512.23	510.33	508.03	508.03	508.33	507.83	508.33	508.73	508.63	509.23
13.....	509.93	508.33	512.23	510.03	508.13	508.03	508.33	507.83	508.23	508.73	508.53	510.43
14.....	511.43	509.03	513.53	509.73	508.53	508.03	508.23	507.83	508.23	508.53	508.43	512.33
15.....	511.43	509.03	513.43	509.63	508.43	509.03	508.23	507.83	508.03	508.43	508.63	511.03
16.....	512.23	509.23	511.93	509.63	508.43	508.53	508.23	507.83	508.03	508.23	508.63	510.83
17.....	511.03	509.23	510.33	509.63	508.33	508.23	508.23	507.83	508.03	508.23	508.63	510.73
18.....	510.13	511.43	510.03	509.53	508.33	508.23	508.23	507.83	507.93	508.13	508.63	510.13
19.....	509.43	512.53	509.73	509.43	508.23	508.13	508.23	507.83	507.93	508.13	511.03	509.83
20.....	509.33	512.33	509.83	509.33	508.23	508.03	508.23	507.83	507.93	508.33	509.93	509.33
21.....	509.33	511.03	509.73	510.23	508.23	507.93	508.23	507.83	507.83	508.23	509.43	509.03
22.....	509.53	510.23	510.03	510.23	508.23	507.93	508.23	507.73	507.83	508.23	509.23	509.13
23.....	509.33	508.83	511.53	510.03	508.23	507.93	508.23	507.73	507.83	508.13	509.03	509.93
24.....	509.33	509.53	511.23	510.03	508.23	507.93	508.13	507.73	507.83	508.13	508.93	509.43
25.....	508.93	509.43	510.03	509.63	508.63	507.93	508.13	507.73	507.83	508.13	509.43	509.13
26.....	508.93	508.73	509.83	509.43	508.73	507.93	508.13	507.73	507.83	508.13	509.33	509.13
27.....	509.13	511.43	510.43	508.73	508.23	507.93	508.03	507.73	507.83	508.13	509.03	509.13
28.....	510.63	511.63	513.53	509.13	508.13	507.93	508.03	507.73	507.83	508.13	508.93	509.23
29.....	512.63	......	512.73	509.03	508.03	508.03	508.03	510.13	507.83	508.13	509.63	508.73
30.....	512.13	......	511.03	508.93	508.03	508.13	508.03	510.88	507.83	508.13	510.33	508.33
31.....	512.13	......	510.43	......	508.03	......	508.03	509.13	......	508.13	......	508.63

GENESEE RIVER AT ELMWOOD AVENUE, ROCHESTER, N. Y.

This station is located at the highway bridge, known locally as Elmwood avenue bridge, at the northern end of South Park, 3½ miles above the center of the city of Rochester, 4¼ miles below

the mouth of Black creek (coming in from the left) and 7½ miles above the mouth of the river.

Prior to 1910 a staff gage, bolted to the downstream end of the first pier from the right-hand shore, was read once daily. From December, 1910, to December, 1911, mean gage heights were computed from a Gurley recording gage in the pump-house immediately below the bridge on the right-hand bank. The elevation of the zero of the gage is 506.848, Barge canal datum, and 245.591, Rochester city datum.

The channel consists of smooth gravel and is considered permanent.

Discharge measurements are made from the bridge at which the staff gage is located. Prior to 1904 measurements and elevations of water-surface were taken in conjunction with the water flowing over and around Johnson-Seymour dam in the city of Rochester.

The winter flow is affected by ice for short periods, although as a rule the channel is open.

The discharge rating curve is well developed for all stages and the published data are considered good for periods of open water.

This station was maintained by the United States Geological Survey in coöperation with the New York State Barge canal and the engineering department of the city of Rochester from 1904 to 1909; from December, 1909, it was maintained in coöperation with the New York State Conservation Commission and the engineering department of the city of Rochester.

Current-meter Discharge Measurements of Genesee River at Elmwood Ave., Rochester, N. Y.

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Corrected discharge.
			Square feet.	*Feet.*	*Second-feet.*
1911.					
Mar. 29	W. G. Hoyt	6.79	3,240	372	13,800
Mar. 29	W. G. Hoyt	6.36	3,210	368	13,100
April 1	W. G. Hoyt	3.43	1,190	359	4,300
Aug. 14 *a*	C. S. Degolyer	1.03	1,020	350	204
Aug. 14 *a*	W. G. Hoyt	1.02	1,040	326	218
Aug. 29	Frank Weber	1.18	1,120	347	448
Sept. 21	W. G. Hoyt	1.16	1,060	335	501

a Temporary earth dam below station caused backwater.

Mean Daily Discharge, Second-feet, of Genesee River at Elmwood Ave., Rochester, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1	320	1,600	13,200	1,960	11,400	1,300	405	320	174	610	500	2,640
2	320	1,600	15,100	1,960	9,620	1,300	405	320	320	610	610	2,180
3	320	1,600	21,400	1,600	13,200	1,300	405	320	320	610	610	1,970
4	320	1,600	28,200	1,450	16,100	1,150	405	285	320	610	610	1,760
5	320	1,600	29,000	1,450	15,800	1,150	405	285	320	610	610	1,620
6	320	1,600	26,600	1,450	9,620	1,300	388	250	1,000	730	610	1,450
7	320	1,600	24,700	1,300	5,800	1,300	362	250	1,960	1,000	610	1,300
8	320	1,450	23,600	1,300	4,600	1,300	337	250	1,600	1,000	610	1,450
9	320	1,450	22,500	1,300	3,720	1,300	320	250	860	860	610	1,780
10	320	1,300	18,500	1,300	3,500	1,150	320	250	860	730	610	1,150
11	320	1,150	10,500	1,150	3,100	1,150	320	320	730	730	730	1,150
12	320	1,150	6,840	1,150	2,500	1,150	320	320	610	500	2,140	860
13	320	1,150	5,800	1,000	2,500	1,150	306	320	500	500	1,780	944
14	320	1,150	5,320	1,000	2,140	1,000	320	320	452	500	1,450	769
15	320	1,150	4,600	860	1,780	1,000	320	313	405	500	1,450	700
16	320	1,150	3,940	860	1,600	860	610	306	500	405	1,450	650
17	320	1,000	3,500	860	1,600	860	610	320	405	405	1,450	600
18	500	900	3,300	1,150	1,600	730	405	320	362	405	1,450	550
19	610	900	2,900	1,450	1,450	730	405	320	320	320	1,450	500
20	1,000	1,000	2,900	3,100	1,450	730	405	320	337	320	1,450	450
21	4,840	1,000	8,780	4,600	1,300	730	405	306	337	320	1,300	450
22	5,800	1,000	7,940	4,160	1,150	610	405	299	320	320	1,150	400
23	8,500	900	6,580	3,940	1,000	610	320	320	320	320	1,000	450
24	8,780	800	6,320	4,160	1,150	610	320	320	320	320	1,000	450
25	5,800	800	5,800	13,900	1,450	500	405	320	405	405	1,000	400
26	4,840	800	5,800	16,400	1,600	500	405	306	405	500	2,500	450
27	3,940	1,500	4,600	18,500	1,600	500	405	285	362	500	2,700	450
28	3,100	2,500	3,500	18,500	1,600	405	362	250	362	500	2,140	450
29	2,700	......	2,900	13,900	1,450	405	320	238	405	500	2,140	500
30	1,960	......	2,500	12,900	1,450	405	320	226	405	500	3,100	750
31	1,600	......	2,140	......	1,300	......	320	186	......	500	......	......

NOTE.— Daily discharge is determined from a well-defined discharge rating curve. Discharge for periods during which ice existed, February 17 to 28 and December 15 to 30, is determined approximately by means of climatological records. Determinations of daily discharge for February 17 to 28 and December 15 to 30 have been revised and supersede those previously published on page 438 of the State Engineer's report for 1910.

Mean Daily Discharge, Second-feet, of Genesee River at Elmwood Ave., Rochester, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	7,240	5,420	6,890	4,070	2,100	847	610	340	1,440	481	658	3,240
2	4,890	4,180	5,390	3,540	2,460	888	610	340	972	756	944	2,390
3	6,010	3,020	4,160	3,240	2,640	944	610	340	795	2,280	1,220	1,920
4	8,470	2,430	3,380	3,100	2,660	958	610	340	634	2,160	1,060	1,620
5	8,920	2,140	3,000	5,060	2,370	902	500	340	577	1,670	944	1,380
6	5,370	2,340	2,320	12,500	2,030	972	500	340	599	2,430	821	1,360
7	3,260	2,700	1,960	13,400	1,740	1,260	500	290	1,800	1,940	834	1,340
8	2,800	2,740	1,670	13,200	1,500	1,150	390	290	2,190	4,960	958	1,280
9	3,000	2,370	1,760	7,940	1,400	1,380	540	290	2,880	3,810	2,480	1,260
10	3,440	1,580	3,280	6,840	1,360	1,200	540	250	2,000	2,780	2,120	1,850
11	2,760	2,000	6,550	6,550	1,120	944	540	250	1,500	1,730	1,620	3,040
12	3,460	1,510	9,450	5,960	599	847	490	250	1,340	1,580	1,360	2,600
13	6,160	1,180	12,700	4,980	730	1,650	490	250	1,100	1,670	1,270	3,740
14	7,970	1,120	14,000	4,290	1,280	3,610	440	250	1,120	1,440	1,600	9,700
15	7,860	2,160	13,400	4,070	1,220	2,340	440	250	888	1,200	1,670	7,690
16	9,840	1,960	10,100	4,700	1,210	1,690	440	250	730	986	1,510	6,140
17	7,380	1,120	5,420	4,140	1,180	1,360	440	250	646	902	1,500	6,060
18	4,740	3,540	4,310	3,900	1,200	1,080	440	250	622	834	1,510	5,800
19	3,700	9,900	3,790	3,590	1,210	930	440	210	634	808	4,740	4,200
20	2,800	11,600	3,400	3,540	1,200	930	440	210	490	1,030	4,910	3,080
21	2,640	7,550	3,700	5,010	1,390	916	440	210	462	986	3,140	2,250
22	2,980	5,100	4,200	5,080	1,330	769	440	234	452	874	2,600	2,100
23	3,100	3,960	7,240	4,230	1,210	694	440	218	434	769	2,230	2,250
24	2,430	3,280	7,830	4,090	1,240	670	390	206	405	756	2,000	3,520
25	1,740	3,020	4,620	3,720	1,760	730	390	206	362	769	2,560	3,220
26	1,540	3,590	3,870	3,120	1,710	500	390	214	388	756	2,980	2,430
27	1,910	6,840	5,420	2,720	1,320	500	340	214	388	795	2,390	2,320
28	4,840	8,330	12,800	2,450	1,090	500	340	222	380	682	2,090	2,860
9	10,400	......	13,100	2,230	930	610	340	2,160	396	646	2,800	2,160
20	10,400	......	9,170	2,090	888	730	340	6,090	405	577	5,200	1,060
31	7,100	......	6,620	......	821	......	340	2,740	......	634	......	1,280

NOTE.— Daily discharge is determined from a well-defined discharge rating curve, except for the period, July 8 to August 28. For this period an approximate auxiliary curve has been used, constructed by means of two discharge measurements made August 14 and comparisons with the discharge at St. Helena and at Jones Bridge.

Monthly Discharge of Genesee River at Elmwood Ave., Rochester, N. Y.
[Drainage area, 2,360 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	8,780	320	1,920	0.814	0.94
February	....	....	1,260	0.534	0.56
March	29,000	2,140	10,600	4.490	5.18
April	18,500	860	4,620	1.960	2.19
May	16,100	1,000	4,130	1.750	2.02
June	1,300	405	906	0.384	0.43
July	610	320	479	0.161	0.19
August	320	186	291	0.123	0.14
September	1,960	174	533	0.226	0.25
October	1,000	320	537	0.228	0.26
November	3,100	500	1,290	0.547	0.61
December	5,150	....	1,110	0.466	0.49

NOTE.— The computations for February and December have been revised and supersede those previously published on page 438 of the State Engineer's report for 1910.

Monthly Discharge of Genesee River, at Elmwood Ave., Rochester, N. Y.
[Drainage area, 2,360 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	12,200	1,540	5,130	2.170	2.500
February	12,600	1,120	3,810	1.610	1.680
March	14,700	1,670	6,310	2.670	3.080
April	14,100	2,090	5,110	2.170	2.420
May	2,660	599	1,450	0.614	0.710
June	4,470	500	1,080	0.458	0.510
July	610	340	458	0.194	0.220
August	7,460	206	590	0.250	0.290
September	3,540	362	901	0.382	0.430
October	5,540	481	1,410	0.598	0.690
November	6,760	658	2,060	0.873	0.970
December	10,400	1,060	3,070	1.300	1.500

GENESEE RIVER AT JONES BRIDGE, NEAR MT. MORRIS, N. Y.

This gaging station is at the highway bridge known as Jones bridge, crossing the Genesee river a short distance below the mouth of Canaseraga creek. It is located about 5 miles down-stream from Mt. Morris. The station was established May 22, 1903, by Robert E. Horton and was maintained by the U. S. Geological Survey in coöperation with this Department until

April 30, 1906, when it was discontinued. It was reëstablished August 12, 1908, in coöperation with the State Water Supply Commission. The bed of the stream is clay and is smooth and fairly permanent. The stream flows in one channel during low water and overflows the adjacent flood plains at high stages. The current is sluggish in very low water.

Current-meter measurements are made from a foot bridge erected on the outriggers on the downstream side of the bridge. The stream freezes over to some extent in winter and is at times obstructed by needle ice. The results of gagings for the years 1903 to 1906, inclusive, may be found in the State Engineer's report for 1905, pages 645 to 649, inclusive, and in the 1906 supplement, on pages 56 to 59, inclusive. The results here presented have been compiled from the reports of the State Conservation Commission.

Mean Daily Gage Height, in Feet, of Genesee River at Jones Bridge, near Mt. Morris, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	11.40	13.10	13.80	8.20	6.20	4.30	3.95	3.60	5.50	5.50	5.10	6.70
2......	12.40	12.50	13.60	7.40	8.80	4.60	3.80	3.60	4.95	7.00	5.50	6.20
3......	22.30	11.60	12.40	7.00	7.50	4.60	3.85	3.50	4.75	7.50	5.20	5.90
4......	18.60	11.20	11.40	7.00	6.70	4.55	4.00	3.60	4.50	8.10	5.10	5.52
5......	14.10	10.90	11.00	10.20	6.20	4.30	3.70	3.85	4.35	6.90	4.76	5.60
6......	13.20	*a*	10.00	16.70	6.00	4.55	3.70	4.30	6.50	6.60	4.80	5.60
7......	13.10	10.40	9.20	19.10	5.70	4.50	3.70	3.90	7.80	8.00	4.95	5.50
8......	13.20	*a*	8.50	14.90	5.50	5.10	3.60	3.80	8.60	6.90	7.40	5.60
9......	12.80	*a*	9.10	11.20	5.40	4.65	3.55	3.85	6.70	6.40	6.50	5.80
10......	12.40	*a*	14.40	11.10	5.30	4.55	3.60	3.60	5.90	6.20	5.80	8.00
11......	11.80	9.40	16.00	10.00	5.20	4.40	3.60	3.60	5.70	6.00	5.40	7.20
12......	15.00	*a*	18.40	9.10	5.20	4.45	3.45	3.45	5.40	6.20	5.40	6.70
13......	20.10	*a*	20.40	8.30	4.90	7.70	3.35	3.25	5.50	5.80	6.00	14.40
14......	19.50	*a*	17.70	7.80	4.85	7.90	3.55	3.45	5.10	5.40	6.00	13.20
15......	22.30	*a*	14.70	8.50	4.65	6.10	3.35	3.35	4.80	5.20	5.80	10.10
16......	19.40	9.50	9.30	7.80	4.75	5.40	3.20	3.65	4.70	5.00	5.70	10.70
17......	16.30	9.80	8.80	8.00	4.80	5.00	3.75	4.25	4.85	5.00	5.70	10.90
18......	14.80	17.80	7.80	7.70	4.80	4.95	4.00	3.85	4.55	5.20	8.50	9.10
19......	13.90	22.40	7.30	7.20	4.80	4.65	3.70	3.90	4.50	5.40	10.40	7.60
20......	13.00	18.50	6.95	8.50	5.30	4.50	3.70	3.75	4.30	5.20	7.60	6.80
21......	12.40	16.60	7.70	10.50	5.00	4.30	3.70	3.60	4.20	5.00	7.10	6.50
22......	12.20	15.10	8.90	8.20	4.65	4.20	3.70	3.55	4.20	4.85	6.60	6.20
23......	11.20	14.60	11.80	8.00	4.75	4.20	3.55	3.30	4.15	4.80	6.20	7.00
24......	12.10	14.50	9.10	7.60	5.70	4.20	3.60	3.40	4.05	4.80	6.60	7.60
25......	11.80	14.40	7.70	7.00	5.50	4.10	3.70	3.65	4.00	4.80	7.70	6.60
26......	11.30	14.20	8.40	6.60	4.85	4.15	3.75	3.60	4.10	4.70	6.70	6.30
27......	11.80	14.40	16.80	6.10	4.70	4.15	3.50	3.80	4.10	4.60	6.40	7.00
28......	21.80	14.00	19.30	6.00	4.40	4.30	3.50	4.50	4.10	4.55	6.80	7.10
29......	20.40	......	11.50	5.75	4.30	4.45	3.45	15.40	4.15	4.51	11.00	5.60
30......	15.40	......	9.80	5.75	4.15	4.10	3.50	8.20	4.40	4.51	8.00	6.70
31......	13.70	......	8.80	......	4.05	......	3.50	6.70	......	4.51	......	7.10

a No record.

Mean Daily Discharge, Second-feet, of Genesee River at Jones Bridge, near Mt. Morris, N. Y.

DAY.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.											
1	......	17,800	1,340	5,880	960	190	175	205	300	575	1,700
2	......	17,700	1,200	8,440	835	138	190	250	318	530	1,450
3	......	17,500	1,090	10,100	810	138	190	265	265	490	1,280
4	......	16,300	1,060	12,400	735	138	175	300	265	552	......
5	......	14,800	1,060	8,200	710	190	162	318	205	470	......
6	......	14,100	1,040	4,980	735	162	162	598	265	390	......
7	......	16,200	935	3,440	760	205	112	760	370	390	......
8	......	14,500	860	2,660	760	175	125	665	470	410	......
9	......	10,300	785	2,630	710	175	138	510	370	410	......
10	......	9,840	710	2,060	665	60	162	390	352	575	......
11	......	4,620	785	1,820	620	150	250	282	335	1,560	......
12	......	3,750	785	1,480	642	150	265	282	318	1,450	......
13	......	3,330	735	1,370	620	190	175	300	300	1,060	......
14	......	2,890	665	1,260	530	598	205	300	282	1,060	......
15	......	2,630	620	1,090	490	575	138	220	205	1,060	......
16	......	2,270	620	1,010	530	470	205	300	90	1,060	......
17	......	2,090	665	960	510	370	138	300	138	1,060	......
18	......	1,850	1,090	885	450	352	109	125	250	1,010	......
19	......	1,790	2,270	810	450	335	220	265	175	910	......
20	......	4,060	2,890	760	510	300	282	265	205	910	......
21	......	6,320	3,220	810	490	205	250	220	162	835	......
22	......	4,760	3,610	810	430	235	125	220	162	810	......
23	......	4,730	2,430	785	370	175	175	175	90	760	......
24	......	4,240	4,590	810	335	100	162	150	175	735	......
25	......	4,420	13,400	985	265	175	162	80	265	1,700	......
26	......	3,920	15,300	1,040	235	195	220	235	318	2,000	......
27	......	2,890	15,100	985	265	215	175	265	490	1,530	......
28	7,900	2,300	10,400	885	282	235	175	490	450	1,230	......
29	......	1,880	6,280	785	282	175	80	390	530	1,940	......
30	......	1,620	9,680	760	250	190	175	370	620	2,210	......
31	......	1,420	......	785	......	60	235	......	575	......	......

NOTE.— Daily discharge is determined from a well-defined discharge rating curve. This table supersedes that published on page 441 of the State Engineer's report for 1910.

Mean Daily Discharge, Second-feet, of Genesee River at Jones Bridge, near Mt. Morris, N. Y.

DAY.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.										
1	3,000	2,530	1,340	410	282	175	960	960	760	1,620
2	2,400	2,030	2,920	530	235	175	688	1,790	960	1,340
3	1,900	1,790	2,090	530	250	150	598	2,090	810	1,180
4	1,500	1,790	1,620	510	300	175	490	2,460	760	970
5	1,200	3,890	1,340	410	205	250	430	1,730	602	1,010
6	1,000	8,920	1,230	510	205	410	1,500	1,560	620	1,010
7	900	10,800	1,060	490	205	265	2,270	2,400	688	960
8	950	7,480	960	760	175	235	2,790	1,730	2,030	1,010
9	1,000	4,590	910	552	162	250	1,620	1,450	1,500	1,120
10	2,500	4,520	860	510	175	175	1,180	1,340	1,120	2,400
11	5,000	3,750	810	450	175	175	1,060	1,230	910	1,910
12	10,300	3,120	810	470	138	138	910	1,340	910	1,620
13	11,900	2,600	665	2,210	112	90	960	1,120	1,230	7,080
14	9,720	2,270	642	2,340	162	138	760	910	1,230	6,120
15	7,320	2,720	552	1,280	112	112	620	810	1,120	3,820
16	3,260	2,270	598	910	80	190	575	710	1,060	4,240
17	2,920	2,400	620	710	220	390	642	710	1,060	4,380
18	2,270	2,210	620	688	300	250	510	810	2,720	3,120
19	1,970	1,910	620	552	205	265	490	910	4,030	2,150
20	1,760	2,720	860	490	205	220	410	810	2,150	1,670
21	2,210	4,100	710	410	205	175	370	710	1,850	1,500
22	2,980	2,530	552	370	205	162	370	642	1,560	1,340
23	5,020	2,400	598	370	162	100	352	620	1,340	1,790
24	3,120	2,150	1,060	370	175	125	318	620	1,560	2,150
25	2,210	1,790	960	335	205	190	300	620	2,210	1,560
26	2,660	1,560	642	352	220	175	335	575	1,620	1,400
27	9,000	1,280	575	352	150	235	335	530	1,450	1,790
28	11,000	1,230	450	410	150	490	335	510	1,650	1,850
29	4,800	1,090	410	470	138	7,880	352	494	4,450	1,010
30	3,610	1,090	352	335	150	2,530	450	494	2,400	1,620
31	2,920	......	318	......	150	1,620	......	494	......	1,850

Monthly Discharge of Genesee River at Jones Bridge, near Mt. Morris, N. Y.
[Drainage area, 1,410 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	....	....	1,400	0.993	1.140
February	7,900	....	1,000	0.709	0.740
March	17,800	1,420	6,690	4.960	5.720
April	15,300	620	3,510	2.490	2.780
May	12,400	760	2,630	1.860	2.140
June	960	235	541	0.384	0.430
July	598	60	226	0.160	0.180
August	282	80	178	0.126	0.150
September	760	80	316	0.224	0.250
October	620	90	300	0.213	0.250
November	2,210	390	989	0.701	0.780
December	....	....	900	0.638	0.740

NOTE.— Monthly discharge for January, February and December is computed from the discharge at St. Helena and Rochester, with due consideration to the relative drainage areas.
The computations for the winter months have been revised and supersede those for the same riod published in the table on page 442 of the State Engineer's report for 1910.

Monthly Discharge of Genesee River at Jones Bridge, near Mt. Morris, N. Y.
[Drainage area, 1,410 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	....	....	3,500	2.480	2.860
February	....	....	2,200	1.560	1.620
March	11,900	900	3,950	2.800	3.230
April	10,800	1,090	3,120	2.210	2.470
May	2,920	318	897	0.636	0.730
June	2,340	335	637	0.452	0.500
July	300	80	187	0.133	0.150
August	7,880	90	577	0.409	0.470
September	2,790	300	767	0.544	0.610
October	2,460	494	1,070	0.759	0.880
November	4,450	602	1,550	1.100	1.230
December	7,080	960	2,150	1.520	1.750

GENESEE RIVER AT ST. HELENA, N. Y.

This gaging station is located at the steel highway bridge crossing Genesee river about 6 miles downstream from the lower falls at Portage and about 5½ miles downstream from Portageville. It was established August 14, 1908, by the U. S. Geological Survey in coöperation with the State Water Supply Commission

The bed of the stream is coarse gravel and is permanent. Conditions for obtaining current-meter measurements are good and a fairly complete and generally consistent discharge curve is obtained.

The gage is read by Herman Piper, and although the stream is somewhat obstructed by needle ice at times, the general ice conditions are not such as to materially impair the accuracy of results deduced from the open-water rating curve, which is used throughout the year. The results here presented are compiled from the records of the State Conservation Commission.

Mean Daily Gage Height, in Feet, of Genesee River at St. Helena, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	4.50	3.50	3.80	3.75	3.30	2.80	2.11	1.71	2.80	2.79	3.10	3.65
2......	5.20	3.45	3.70	3.15	4.40	2.46	1.95	1.74	2.60	4.50	3.02	3.35
3......	7.20	3.30	3.40	3.50	3.80	2.55	1.98	1.72	2.55	3.65	2.81	3.28
4......	5.20	3.30	3.10	3.60	3.50	2.28	1.96	1.86	2.30	3.49	2.68	2.96
5......	4.30	3.10	2.78	5.40	3.25	2.39	1.76	2.60	2.25	4.02	2.61	3.09
6......	3.65	2.80	3.05	6.40	3.10	2.34	1.88	2.06	4.70	3.26	2.59	2.89
7......	3.70	2.48	3.10	7.40	3.00	3.10	1.84	2.70	3.70	5.66	2.91	2.94
8......	3.70	2.70	2.80	5.60	3.40	2.65	1.85	2.06	4.60	4.25	4.10	3.01
9......	3.70	3.05	2.90	4.90	2.75	2.49	1.58	1.96	3.45	3.69	3.46	3.54
10......	3.35	3.00	4.00	5.10	2.70	2.39	1.61	1.80	3.35	3.31	3.18	4.14
11......	3.50	2.80	5.10	4.70	2.75	2.28	1.76	1.70	3.10	3.29	3.08	3.82
12......	6.00	2.70	6.00	4.40	2.70	2.36	1.51	1.75	3.00	3.36	2.98	3.72
13......	5.20	2.80	6.10	4.00	2.70	5.60	1.80	1.58	3.00	3.11	3.54	6.60
14......	5.40	2.70	5.70	4.00	2.50	4.20	1.80	1.82	2.70	2.94	3.28	5.26
15......	6.60	2.70	5.60	4.60	2.44	3.35	1.68	1.50	2.55	2.76	3.21	4.88
16......	4.80	3.05	4.20	4.10	2.45	3.05	1.60	2.42	2.40	2.66	3.21	4.61
17......	4.20	3.00	4.00	4.10	2.50	2.80	1.82	2.18	2.55	2.64	3.20	5.05
18......	3.80	6.80	3.90	3.90	2.55	2.60	1.94	2.05	2.36	2.74	5.24	4.30
19......	3.80	5.60	3.30	3.75	2.80	2.55	1.96	2.06	2.36	3.00	4.64	3.82
20......	3.60	4.50	3.50	4.70	2.80	2.41	2.02	1.72	2.29	2.76	4.18	3.34
21......	3.50	4.00	3.35	4.70	2.70	2.31	2.01	1.95	2.26	2.68	3.66	3.38
22......	3.65	3.70	4.50	4.60	2.60	2.21	1.91	1.72	2.20	2.60	3.52	3.38
23......	3.20	4.90	5.70	4.40	2.49	2.29	1.86	1.70	2.19	2.62	3.36	4.22
24......	2.88	4.80	4.40	4.20	3.30	2.26	1.89	1.68	2.16	2.62	3.79	3.85
25......	2.95	3.80	3.75	3.80	2.95	2.18	2.06	1.75	2.11	2.55	3.94	3.46
26......	2.90	3.70	4.30	3.60	2.55	2.18	1.62	1.96	2.16	2.49	3.59	3.29
27......	3.35	4.90	7.00	3.40	2.42	2.26	1.70	1.86	2.14	2.48	3.38	3.88
28......	7.10	4.60	6.70	3.25	2.41	2.40	1.65	3.60	2.08	2.49	3.76	3.52
29......	5.20	......	4.80	3.10	2.22	2.28	1.91	5.70	2.20	2.36	3.46	2.84
30......	5.10	......	4.30	3.06	2.08	2.18	1.51	3.65	2.70	2.45	4.05	3.01
31......	4.00	......	4.00	......	2.26	......	1.74	3.15	......	2.45	......	3.18

Mean Daily Discharge, Second-feet, of Genesee River at St. Helena, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1	150	672	19,500	1,070	3,390	672	187	121	140	226	470	1,290
2	150	568	17,000	919	8,340	614	148	154	226	191	420	1,290
3	150	756	14,000	783	7,880	638	98	148	226	169	391	1,170
4	150	568	9,730	894	8,180	560	109	132	239	211	482	1,130
5	150	500	8,250	868	4,360	591	169	132	211	178	308	1,060
6	150	450	9,380	783	3,030	575	169	121	432	191	260	868
7	150	450	20,300	698	2,210	575	114	73	672	284	319	783
8	150	400	6,740	614	1,780	538	114	73	552	351	308	715
9	150	400	4,750	664	1,560	517	157	126	374	284	319	647
10	150	400	3,290	583	1,440	489	157	169	298	252	800	600
11	150	350	2,840	560	1,240	489	157	239	226	239	1,780	550
12	150	350	2,710	470	1,100	517	140	191	201	191	1,220	500
13	150	350	3,230	445	988	451	284	102	239	80	1,240	450
14	150	400	2,270	408	868	391	656	102	226	114	988	400
15	150	400	1,870	426	783	335	408	154	169	184	1,080	350
16	150	400	1,740	445	698	426	298	169	211	114	1,020	300
17	150	350	1,540	510	698	451	284	84	160	169	1,040	300
18	150	350	1,310	1,190	614	391	239	107	91	169	928	250
19	......	350	1,520	2,390	672	368	198	201	160	148	885	250
20	......	400	4,840	3,110	538	335	391	191	160	169	800	200
21	......	400	5,220	3,250	591	313	126	102	148	218	732	200
22	......	400	3,980	2,800	496	298	107	154	132	148	647	200
23	......	350	4,260	1,710	517	284	107	126	114	132	732	200
24	......	300	4,110	7,720	698	239	91	148	140	218	800	200
25	......	300	4,260	14,900	732	194	184	77	169	201	1,950	200
26	......	300	3,110	19,700	868	201	191	160	160	252	1,950	200
27	......	2,000	2,260	8,600	758	222	102	91	591	391	1,400	200
28	......	11,700	1,810	4,580	647	187	148	69	408	408	1,130	200
29	......	......	1,590	5,580	538	178	154	126	335	568	1,150	400
30	......	......	1,200	6,260	614	169	132	98	284	432	1,980	6,000
31	......	......	1,190	......	758	......	91	126	......	496	......	3,000

NOTE.— Daily discharge is determined from a well-defined discharge rating curve. Discharge for the periods during which ice was present, January 1 to 18, February 5 to 27 and December 10 to 31, is approximately determined from climatological records and the discharge at Rochester. It should be noted that the determinations of the daily discharge for January 1 to 18, February 5 to 27 and December 10 to 31 have been revised and supersede those previously published on page 445 of the State Engineer's report for 1910.

Mean Daily Discharge, Second-feet, of Genesee River at St. Helena, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	2,690	1,300	1,660	1,600	1,100	663	237	108	663	655	916	1,470
2	4,020	1,250	1,530	961	2,530	421	178	116	514	2,690	846	1,150
3	9,680	1,100	1,200	1,300	1,660	480	188	110	480	1,470	671	1,080
4	4,020	1,100	916	1,410	1,300	317	182	150	327	1,290	572	794
5	2,370	916	648	4,470	1,050	377	121	514	302	1,960	521	907
6	1,470	663	600	7,120	916	349	156	218	3,030	1,060	507	735
7	1,200	433	600	10,400	828	916	144	587	1,530	5,100	752	777
8	1,100	587	663	4,950	1,200	550	147	218	2,860	2,300	2,070	837
9	1,100	872	743	3,400	625	440	77	182	1,250	1,520	1,260	1,340
10	1,000	828	1,930	4,020	587	377	83	132	1,150	1,110	988	2,130
11	1,100	663	3,810	3,030	625	317	121	105	916	1,090	898	1,690
12	5,990	587	5,990	2,530	587	361	63	118	828	1,160	811	1,560
13	4,020	663	6,260	1,930	587	4,950	132	77	828	925	1,340	7,720
14	4,470	587	5,200	1,930	446	2,220	132	138	587	777	1,080	4,150
15	7,720	587	4,950	2,860	408	1,150	100	61	480	633	1,020	3,360
16	3,210	872	2,220	2,070	414	872	81	396	383	558	1,020	2,880
17	2,220	828	1,930	2,070	446	663	138	268	480	543	1,010	3,620
18	1,660	8,340	1,790	1,790	480	514	175	214	361	617	4,110	2,370
19	1,200	4,950	1,100	1,600	663	480	182	218	361	828	2,930	1,690
20	900	2,690	1,300	3,030	663	389	203	110	322	633	2,190	1,140
21	800	1,930	1,150	3,030	587	333	199	178	307	572	1,480	1,180
22	700	1,530	2,690	2,860	514	282	165	116	277	514	1,320	1,180
23	700	1,200	5,200	2,530	440	322	150	105	273	529	1,160	2,250
24	650	1,100	2,530	2,220	1,100	307	159	100	259	529	1,650	1,720
25	600	1,000	1,600	1,660	786	268	218	118	237	480	1,850	1,260
26	650	1,000	2,370	1,410	480	268	86	182	259	440	1,400	1,090
27	1,000	3,400	8,980	1,200	396	307	105	150	251	433	1,180	1,760
28	9,330	2,860	8,030	1,050	389	383	93	1,410	226	440	1,610	1,360
29	4,020	......	3,210	916	287	317	165	5,200	277	361	4,610	695
30	3,810	......	2,370	881	225	268	63	1,470	587	414	2,000	837
31	1,930	......	1,930	......	307	......	116	961	......	414	......	988

Monthly Discharge of Genesee River at St. Helena, N. Y.
[Drainage area, 1,030 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	8,600	....	1,140	1.110	1.28
February	11,700	....	880	0.854	0.89
March	20,300	1,190	5,480	5.320	6.13
April	19,700	408	3,100	3.010	3.36
May	8,340	496	1,860	1.810	2.09
June	672	169	407	0.395	0.44
July	656	91	191	0.185	0.21
August	239	69	131	0.127	0.15
September	672	91	256	0.249	0.28
October	568	80	238	0.231	0.27
November	1,980	260	918	0.891	0.99
December	....	....	778	0.763	0.88

NOTE.— The computations for January, February and December have been revised and supersede those previously published on page 446 of the State Engineer's report for 1910.

Monthly Discharge of Genesee River at St. Helena, N. Y.
[Drainage area, 1,030 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	9,680	600	2,750	2.670	3.08
February	8,340	433	1,570	1.520	1.58
March	8,980	600	2,750	2.670	3.08
April	10,400	881	2,670	2.590	2.89
May	2,530	225	730	0.709	0.82
June	4,950	268	662	0.643	0.72
July	237	63	141	0.137	0.16
August	5,200	61	452	0.439	0.51
September	3,030	226	687	0.667	0.74
October	5,100	361	1,030	1.000	1.15
November	4,610	507	1,460	1.420	1.58
December	7,720	695	1,800	1.750	2.02

CANASERAGA CREEK DRAINAGE BASIN.

DESCRIPTION.

Canaseraga creek, one of the most important tributaries to the Genesee river from the east, rises in the extreme northwestern corner of Steuben county and flows in a northwestern direction to its junction with the Genesee river, a short distance below the village of Mt. Morris.

Through its entire course, the creek flows through a flat, fertile valley, devoted almost entirely to the pursuit of agriculture. From the village of Dansville to Mt. Morris, a distance of 22½ miles, the river winds back and forth across the valley. The velocity is so slow that the large amount of silt which is brought down from the foot hills by the smaller streams is deposited in the creek bed, raising it to an elevation higher, in many cases, than the surrounding country. The deposit of silt, coupled with the extreme deviation of the creek from a straight line, causes the 11,000 acres, which border on the stream below Dansville, to become annually inundated by the flood waters.

CANASERAGA CREEK AT DANSVILLE, N. Y.

This station is located at the highway bridge one mile due west from the village of Dansville and about 22 miles above the mouth of the stream.

It was established July 21, 1910, by the N. Y. State Water Supply Commission, in coöperation with the U. S. Geological Survey, to obtain data in regard to the flow of this stream and to aid in a general way the studies being made of the flow of the Genesee river.

The data here presented have been compiled from the reports of the State Conservation Commission.

A staff gage is bolted to the downstream, left-hand wing wall and is read twice daily. Low-water measurements are made by wading below the bridge and high-water measurements will be made from the bridge. The bed of the stream at this point is composed of sand and gravel and may shift during high water.

The rating curve is not yet sufficiently developed to warrant publishing the discharge, so only discharge measurements and gage heights are published.

Mean Daily Gage Height, in Feet, of Canaseraga Creek at Dansville, N. Y.

DAY.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.											
1	......	3.20	2.18	2.32	2.18	1.80	1.60	2.22	2.06	2.09	2.24
2	......	3.20	2.05	2.55	2.18	1.78	1.60	1.95	2.20	2.06	2.19
3	......	2.95	2.10	2.42	2.05	1.75	1.62	1.94	1.99	2.03	2.22
4	......	2.78	2.12	2.32	1.98	1.70	1.82	1.81	2.06	1.92	2.24
5	......	2.88	3.08	2.28	2.10	1.62	1.78	1.98	2.03	1.99	2.12
6	......	2.80	3.05	2.20	2.08	1.68	1.70	1.98	1.92	2.01	2.16
7	......	2.55	3.85	2.12	1.98	1.70	1.68	1.84	2.89	2.18	2.19
8	......	2.58	3.40	2.15	2.02	1.68	1.72	2.24	2.74	2.02	2.24
9	......	2.78	2.92	2.12	1.92	1.72	1.68	2.06	2.74	2.29	2.18
10	......	3.15	2.82	2.02	1.90	1.70	1.60	1.89	2.51	2.16	2.32
11	......	3.40	2.72	2.02	2.05	1.72	1.68	1.81	2.24	2.08	2.24
12	......	3.65	2.52	1.98	2.20	1.70	1.60	1.88	2.26	2.19	2.36
13	......	3.90	2.45	1.92	2.28	1.72	1.62	1.94	2.12	2.20	3.20
14	......	4.20	2.60	1.92	2.18	1.70	1.60	1.84	2.04	2.18	2.95
15	......	4.20	2.48	1.90	2.05	1.65	1.80	1.81	2.04	2.26	2.69
16	......	3.45	2.32	1.82	1.95	1.70	2.10	1.82	1.96	2.18	2.95
17	2.33	3.15	2.45	2.02	1.88	2.05	1.88	1.82	1.92	2.29	2.91
18	3.40	3.30	2.40	2.05	......	1.95	1.98	1.80	2.04	2.91	2.69
19	3.60	3.30	2.30	1.92	1.82	1.82	1.88	1.88	1.94	2.59	2.64
20	3.40	3.05	2.48	1.92	1.80	1.98	1.72	1.86	1.88	2.50	2.29
21	3.05	2.78	2.40	1.95	1.82	1.80	1.70	1.79	1.89	2.31	2.11
22	2.82	2.78	2.45	1.92	1.88	1.78	1.72	1.78	1.96	2.24	2.20
23	2.35	2.75	2.62	1.95	1.82	1.75	1.72	1.81	2.01	2.18	2.59
24	2.08	2.48	2.48	2.05	1.80	1.72	1.80	1.85	1.92	2.25	2.62
25	2.45	2.88	2.32	2.18	1.82	1.70	2.02	1.84	1.94	2.21	2.49
26	2.94	2.95	2.22	2.08	1.80	1.68	1.88	1.91	1.88	2.19	2.39
27	3.40	4.15	2.12	1.98	1.88	1.65	1.72	1.82	1.99	2.18	2.81
28	3.35	3.80	2.02	1.95	2.02	1.62	2.45	1.84	1.96	2.14	2.58
29	......	2.82	1.90	1.82	1.92	1.62	2.50	1.92	1.92	2.39	2.41
30	......	2.58	1.88	1.80	1.80	1.62	2.22	1.96	1.95	2.26	2.44
31	......	2.35	......	1.95	......	1.60	2.20	......	2.14	......	2.75

Current-meter Discharge Measurements of Canaseraga Creek at Dansville, N. Y.

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Corrected discharge.
1911.			*Square feet.*	*Feet.*	*Second-feet.*
March 31	W. G. Hoyt	2.50	78.0	68	242.0
Aug. 28 *a*	Frank Weber	1.77	41.4	36	26.9

a Measurement by wading above bridge.

KESHEQUA CREEK DRAINAGE BASIN.

DESCRIPTION.

Keshequa creek, the principal tributary to Canaseraga creek, has its source among the hills of northern Allegany county and flows north and northeast through Nunda and Tuscarora joining Canaseraga creek near Sonyea, the home of the Craig Colony for Epileptics. Throughout its length of some 20 miles it flows through a narrow valley and falls about 1,200 feet. No power is developed, as the flow during the summer averages only 3 to 6 second-feet. The yearly rainfall is a little above the average for the Genesee valley and ranges from 28 to 36 inches.

KESHEQUA CREEK AT SONYEA, N. Y.

This station is located at the upper highway bridge in the village and about two miles above the mouth of the stream. It was installed to aid in the studies of the flow of Canaseraga creek and to obtain data in regard to the run-off of small drainage areas in the western part of the state.

A staff gage was installed July 22, 1910, by the N. Y. State Water Supply Commission, in coöperation with the U. S. Geological Survey. This gage is fastened to a pile, located on the right-hand bank between the two bridges, directly back and across from the Craig Colony power house. This gage is intended only for the low-water periods of the year, as on October 25 a chain gage was installed on the upstream side of the upper bridge. Discharge measurements are made by wading. Either bridge may be used during high water.

The bed of the creek is composed of gravel and sand and the channel shifts back and forth from year to year. The rating curve is not developed as yet and only gage heights and discharge measurements are published.

The data here presented have been compiled from reports of the State Conservation Commission.

Mean Daily Gage Height, in Feet, of Keshequa Creek at Sonyea, N. Y.

DAY.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.											
1	......	3.70	3.72	3.58	3.18	2.95	2.90	3.05	3.15	3.20	3.40
2	......	3.60	3.65	3.68	3.20	2.90	2.88	2.98	3.45	3.18	3.42
3	......	3.60	3.75	3.68	3.20	2.95	2.92	2.95	3.20	3.15	3.32
4	......	3.60	3.70	3.58	3.12	2.98	3.12	2.98	3.18	3.15	3.25
5	......	3.60	4.70	3.48	3.10	2.88	3.00	3.00	3.15	3.15	3.20
6	......	3.50	4.40	3.40	3.10	2.92	2.95	3.25	3.15	3.20	3.35
7	......	3.45	4.30	3.48	3.10	3.00	3.00	3.12	4.18	3.42	3.35
8	......	3.50	3.98	3.45	3.10	3.02	2.98	4.55	3.50	3.50	3.45
9	......	3.65	3.95	3.40	3.05	2.98	2.95	4.50	3.42	3.52	3.52
10	......	4.55	3.92	3.35	3.05	2.92	2.92	3.90	3.30	3.45	3.55
11	......	4.85	3.85	3.35	3.05	2.95	2.95	3.38	3.40	3.35	3.55
12	......	5.10	3.70	3.35	3.10	2.95	2.92	3.45	3.42	3.35	3.88
13	......	4.65	3.62	3.28	3.32	2.92	2.88	3.38	3.40	3.38	4.75
14	......	4.50	3.60	3.25	3.20	2.85	2.88	3.20	3.32	3.35	3.95
15	......	4.20	3.58	3.25	3.15	2.90	2.92	3.20	3.20	3.35	4.10
16	......	3.95	3.55	3.25	3.10	2.88	2.95	3.05	3.20	3.40	3.95
17	5.40	3.70	3.58	3.28	3.05	3.28	2.98	3.00	3.15	3.42	4.02
18	5.35	3.65	3.60	3.25	3.05	3.20	2.95	3.00	3.20	4.15	3.75
19	4.75	3.68	3.60	3.25	3.00	2.98	2.95	3.02	3.20	4.35	3.55
20	3.90	3.70	3.60	3.20	2.98	2.95	2.92	2.98	3.20	3.50	3.35
21	3.80	3.70	3.60	3.15	3.00	2.98	2.90	2.98	3.20	3.50	3.35
22	3.80	3.98	3.60	3.12	3.00	3.00	2.90	2.98	3.25	3.50	3.38
23	3.82	3.88	3.60	3.18	3.00	3.00	2.85	3.00	3.22	3.50	4.08
24	3.78	3.82	3.58	3.50	3.00	2.98	2.80	2.98	3.20	4.52	3.58
25	3.68	3.70	3.55	3.35	2.98	2.95	3.02	2.92	3.20	4.05	3.45
26	4.25	3.72	3.55	3.30	2.92	3.00	3.08	3.00	3.18	3.50	3.45
27	4.50	4.80	3.55	3.18	2.90	3.00	3.00	3.02	3.15	3.45	3.90
28	3.85	4.18	3.50	3.10	3.05	3.00	3.35	3.05	3.15	3.52	3.60
29	......	3.82	3.40	3.02	2.95	2.88	3.25	3.08	3.15	3.70	3.45
30	......	3.85	3.35	3.00	2.95	2.85	3.30	3.20	3.15	3.45	3.45
31	......	3.75	......	3.02	......	2.88	3.08	......	3.22	......	3.45

Current-meter Discharge Measurements of Keshequa Creek at Sonyea, N. Y.

DATE.	Hydrographer.	Mean gage reading. d	Total area.	Total width.	Corrected discharge.
			Square feet.	*Feet.*	*Second-feet.*
1911.					
Mar. 15....	C. C. Covert....................	a 4.18	62.5	60	207
Mar. 31....	W. G. Hoyt....................	b 3.70	70.2	47.5	70
Aug. 26....	Frank Weber....................	c 3.00	11.2	23.5	5.9

a Gage height at staff gage, 1.86. *b* Gage height at staff gage, 1.39. *c* Gage height at staff gage, 0.73. *d* Chain gage.

CANADICE LAKE.

DESCRIPTION.

Canadice lake is tributary to Genesee river through Hemlock lake outlet and Honeoye creek. The area drained by the lake forms an irregular rectangle, the lake lying somewhat to the left of the longitudinal axis and the greater portion of the drainage being on the eastern slope. The western slope is narrow and precipitous. Bald Hill rises from an altitude of 1,090 feet at the lake to 1,800 feet at the summit and has its axis parallel to the lake at an average distance of three-fourths of a mile from it. The lake has a water-surface area of 0.7 square mile and drains a total area of 12.6 square miles, 5.6 per cent of which is lake surface.

CANADICE LAKE OUTLET NEAR HEMLOCK, N. Y.

A wier was constructed at the outlet at the foot of the lake by the city engineer's department of Rochester, N. Y., in February, 1903. The entire yield of the drainage basin passes this wier.

A standard thin-edged wier, with a five-foot crest and two end contractions, is so arranged with needle-timbers at the ends that during high water the length may be increased to 14.96 feet with no end contractions. The wier crest stands three feet above the stream channel and is never submerged by backwater. There are two additional rectangular gates each one foot square, with three complete contractions and a fourth partial contraction at the bottom. The outflow from the lake above the wier is controlled by gates.

A reading of the depth of the wier is taken each morning, and also for each change of the gates, the depth being read to hundredths and corrections being made for velocity of approach for the larger discharges. The discharge is calculated by the Francis formula. The record has been furnished by E. A. Fisher, city engineer, and John F. Skinner, principal assistant city engineer, of Rochester, N. Y.

Monthly Discharge of Canadice Lake near Hemlock, N. Y.
[Drainage area, 12.6 square miles.]

MONTH.	Mean elevation of lake above low water.	DISCHARGE IN SECOND-FEET.		RUN-OFF.
		Mean.	Per square mile.	Depth in inches on drainage area.
1911.				
January	1.529	5.0	0.397	0.458
February	1.828	5.6	0.444	0.462
March	2.210	9.9	0.786	0.906
April	2.489	10.5	0.833	0.929
May	2.411	4.0	0.317	0.366
June	2.402	4.2	0.333	0.372
July	1.905	3.9	0.310	0.357
August	1.211	3.7	0.294	0.339
September	0.959	3.6	0.286	0.319
October	0.816	3.8	0.302	0.348
November	0.701	4.2	0.333	0.372
December	1.152	4.3	0.341	0.393
The year	1.6344	5.21	0.414	5.625

NIAGARA RIVER DRAINAGE.

GENERAL FEATURES.

Niagara river connects lakes Erie and Ontario. It receives the drainage from Tonawanda creek and adjacent smaller areas in New York.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Erie Canal at Tonawanda, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	*a	572.50	571.80	571.30	571.00	571.20	571.00	570.40	570.60	*a	570.60	571.10
2	571.70	571.60	571.50	*a	571.20	571.30	*a	570.40	570.60	570.70	570.90	571.10
3	571.40	570.80	571.00	571.30	570.80	570.90	571.00	570.40	*a	570.30	570.90	*a
4	571.80	571.30	570.80	571.70	571.90	*a	571.10	570.40	569.80	570.70	571.00	571.00
5	572.10	*a	*a	571.60	572.20	570.70	571.10	570.40	569.80	571.10	*a	571.20
6	571.80	570.80	570.80	572.30	571.50	570.90	571.10	*a	570.60	571.10	570.20	571.10
7	571.70	571.00	570.80	572.30	*a	571.00	570.80	570.50	570.60	570.40	571.00	571.10
8	*a	570.90	570.90	572.30	571.50	571.10	570.20	570.60	570.50	*a	571.00	571.00
9	571.30	570.90	571.00	*a	571.30	571.00	*a	570.80	570.70	571.40	570.70	571.10
10	571.00	571.00	571.50	571.40	571.40	571.00	570.90	570.90	*a	571.40	571.10	*a
11	570.90	570.90	572.00	571.60	571.40	*a	570.80	570.90	570.90	571.30	571.00	571.50
12	571.80	*a	*a	571.40	571.80	571.30	570.70	570.50	571.10	571.10	*a	571.40
13	571.90	569.70	572.80	571.40	571.80	571.10	570.90	*a	570.80	570.90	570.90	571.50
14	571.90	569.80	572.80	571.30	*a	570.80	570.70	570.30	570.70	570.90	570.10	571.70
15	*a	570.40	572.90	571.30	571.60	570.70	570.60	570.30	571.00	*a	570.20	571.90
16	571.70	570.40	572.20	*a	571.40	570.60	*a	570.70	571.00	571.20	570.40	571.80
17	571.40	570.40	572.20	571.10	571.00	570.60	570.60	571.10	*a	571.00	570.20	*a
18	570.90	570.70	572.10	571.10	570.90	*a	570.60	570.70	570.80	571.10	570.30	571.50
19	570.40	*a	*a	571.10	570.80	571.30	570.50	570.50	570.70	571.20	*a	570.70
20	570.40	571.80	571.60	571.10	571.40	571.40	570.60	*a	570.70	571.30	571.30	570.60
21	570.20	572.00	572.10	571.00	*a	571.50	570.60	570.60	570.70	571.20	571.10	570.80
22	*a	571.70	572.10	571.20	571.60	571.30	570.60	570.40	570.60	*a	570.80	570.90
23	570.80	571.40	572.20	*a	571.60	570.90	*a	570.30	570.80	571.60	571.50	570.30
24	570.70	571.00	572.10	570.90	571.00	570.80	570.90	570.30	*a	571.30	571.20	*a
25	570.40	571.00	572.10	571.00	571.00	*a	571.30	570.00	570.30	571.10	570.90	571.40
26	570.00	*a	*a	571.10	570.90	571.00	570.70	569.80	570.10	570.90	*a	571.30
27	570.20	571.40	571.70	571.00	570.90	571.20	570.40	*a	570.30	570.70	571.00	571.00
28	572.40	571.80	572.10	571.10	*a	571.10	570.40	569.80	570.10	570.60	571.30	570.60
29	*a	......	571.70	570.90	571.50	571.10	570.40	569.80	570.50	*a	571.60	570.20
30	572.60	......	571.60	*a	571.40	571.00	*a	569.70	570.70	571.20	571.10	569.90
31	572.50	......	571.70	......	571.50	......	570.40	569.70	......	570.90	......	*a

* Sunday. *a* No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Erie Canal at Change Bridge, Pendleton, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	571.60	572.70	572.80	571.55	570.60	571.00	570.70	570.50	570.50	570.65	570.60	571.10
2	571.65	572.00	572.75	571.45	570.85	570.75	571.00	570.60	570.65	570.30	570.20	571.10
3	571.75	571.50	572.70	571.20	570.80	570.80	571.00	570.65	570.40	570.20	570.85	570.80
4	572.00	571.40	572.50	571.15	572.10	570.55	571.05	570.20	570.40	570.30	570.60	570.80
5	573.00	571.50	572.20	572.35	571.15	570.50	570.90	570.20	570.10	570.90	570.60	571.20
6	573.00	571.25	572.00	571.80	571.60	570.70	570.80	570.65	570.50	570.70	570.30	571.10
7	573.50	571.00	571.80	573.00	571.10	570.70	570.60	570.50	570.40	570.00	570.95	571.00
8	572.00	570.90	571.50	572.15	571.50	570.80	570.30	570.70	570.35	570.85	570.65	570.80
9	571.50	571.00	571.20	571.80	570.98	570.80	570.75	570.80	570.60	570.60	570.65	570.70
10	571.25	571.05	572.40	571.50	571.00	571.00	570.70	570.60	570.90	571.40	571.20	571.15
11	571.10	571.10	573.50	571.40	571.85	571.20	570.65	570.60	570.85	571.10	571.25	571.00
12	572.60	570.90	574.60	571.30	571.85	571.30	570.65	570.25	570.70	570.80	571.00	571.10
13	573.00	570.60	575.00	571.35	571.70	571.00	570.60	570.25	570.60	570.80	570.50	571.60
14	573.05	570.60	575.20	571.50	571.60	571.60	570.60	570.30	570.50	570.65	569.90	571.30
15	573.10	570.50	574.50	571.55	571.50	571.70	570.55	570.35	570.90	571.00	570.40	571.55
16	572.70	570.70	574.55	571.30	571.10	571.70	570.65	570.40	570.90	571.00	570.50	571.65
17	572.20	570.80	573.60	571.20	570.90	570.85	570.70	570.85	570.80	571.85	570.40	571.75
18	572.00	571.00	572.20	571.15	570.90	571.10	570.60	571.10	570.75	571.80	572.00	571.60
19	571.50	572.00	572.75	571.00	571.00	571.00	570.50	570.40	570.55	571.20	571.50	570.80
20	571.10	573.30	572.40	570.95	571.50	571.15	570.50	570.30	570.50	571.30	571.50	571.40
21	570.80	573.00	572.30	571.00	571.75	571.15	570.50	570.50	570.40	571.30	571.10	570.50
22	570.70	572.70	572.50	570.80	571.75	571.10	570.80	570.50	570.40	571.40	571.10	570.50
23	571.00	572.50	572.55	571.00	571.20	571.00	570.50	570.40	570.20	571.45	571.50	570.75
24	570.90	572.00	572.50	570.80	570.80	570.60	571.05	570.20	570.30	571.50	571.40	571.50
25	570.80	571.50	572.00	571.00	570.80	571.00	570.90	570.00	570.20	571.00	571.40	571.55
26	570.50	571.50	571.85	571.00	570.75	570.90	570.85	570.00	570.25	570.80	571.00	571.10
27	571.60	572.30	572.35	571.00	570.75	570.90	570.80	570.10	570.35	570.70	571.00	571.00
28	573.60	572.70	572.60	570.95	571.20	570.80	570.55	570.10	570.00	570.60	570.85	570.60
29	573.80	......	572.25	570.98	571.30	570.75	570.45	570.05	570.30	571.20	571.20	570.20
30	574.70	......	571.95	571.00	571.20	570.70	570.45	569.80	570.20	571.05	571.40	569.80
31	574.00	......	571.70	......	571.10	......	570.45	570.00	......	570.60	......	570.20

HUDSON RIVER DRAINAGE BASIN.

DESCRIPTION OF BASIN.

The principal sources of Hudson river lie in the wildest portion of the Adirondack mountains, in Essex county, northeastern New York. A number of branches, any one of which might possibly be considered the main stream, form its upper waters; but if the highest collected and permanent body of water be assumed as the true head, then the source of the Hudson becomes Lake Tear-of-the-Clouds, which lies at an elevation of 4,322 feet above tide, in the center of the triangle formed by Mounts Marcy and Skylight and Gray Peak.

The river flows rather irregularly southward until it reaches the northern boundary of Saratoga county, when it makes a sharp turn and flows eastward for about 12 miles by general course, passing through the mountains and forming, as it cuts across the rocky strata, several notable waterfalls. At Sandy Hill, just below Glens Falls, it makes another abrupt turn and flows southward, continuing in this direction until it empties into New York bay.

From Lake Tear-of-the-Clouds to the mouth of the river the distance by water is probably about 300 miles. The total area drained is 13,366 square miles. The river is tidal to Troy, which is also at the head of navigation.

The tributaries of the Hudson are numerous, and many of them are large and important. Indian river, Schroon river, and Sacandaga unite with the main stream above Glens Falls, and between the latter point and Troy, Hudson river receives Batten Kill, Fish creek, Hoosic river and the Mohawk. The tributaries below Troy include Catskill, Esopus and Rondout creeks and Wallkill river from the west, and Kinderhook creek, Jansen kill, Wappinger creek, Fishkill creek and Croton river from the east.

LOWER HUDSON RIVER DRAINAGE BASIN.

DESCRIPTION.

Below Troy the bed of the Hudson river is depressed below tide-water level. The stage of the stream is controlled by tidal action, by the inflow of the main stream and by the lateral drainage jointly. The drainage tributary to this portion of the stream includes the south and east slopes of the Catskill mountain region on the west bank and a series of streams heading near the New York–Massachusetts and the New York–Connecticut lines on the east. These streams include the principal present and proposed sources of municipal water-supply of New York city.

RONDOUT CREEK DRAINAGE BASIN.

DESCRIPTION.

Rondout creek has its source in the heart of the timber-covered mountain group forming Wittemberg chain. It flows southeasterly to Napanoch, where it encounters the foot of Shawangunk range, turns abruptly to the northeast and enters the Hudson river at Rondout. Its watershed on the south is very restricted, as it is separated from the Wallkill river only by the narrow Shawangunk ridge. Notable waterfalls occur at Honk Falls and Napanoch over Hudson river shale, and on Good Beer kill above Ellenville. On Good Beer kill there is a total fall of 870 feet from the Cape, three miles above Ellenville, to Ellenville. Of this about 200 feet are concentrated in a series of cascades, called Hanging Rock falls.

Water power was originally developed at Napanoch in 1754. At present there are five dams in this village, utilizing a total of 115 feet fall. A series of cascades, involving a descent of about 50 feet, occurs at High Falls, where the water flows over Rosendale cement rock.

RONDOUT CREEK AT ROSENDALE, N. Y.

The Rosendale gaging station is located on the highway bridge and was established by Robert E. Horton for the United States Geological Survey in coöperation with the New York City Water Supply Departments on July 6, 1901; it was assumed by the Board of Water Supply of the city of New York on June 1, 1907,

at which time a new standard Board of Water Supply chain gage was put in to replace the old one.

Measurements are taken from the bridge at high and medium stages and by wading at a point about 1,000 feet below the bridge at low stages.

The gage is located on the downstream side of the bridge in the middle panel.

The water is confined to one channel under the single-span steel bridge which is 135.7 feet between abutments, at all stages.

A portion of the water of the creek is diverted by a dam below High Falls and sent through the Delaware and Hudson canal, and is discharged into the creek below the gaging station. At Creek Locks, which is about 1½ miles below Rosendale, there is an overflow weir, from which the approximate discharge of the canal may be obtained. The weir, which has a crest of 3.8 feet, is located at the left end of the lock and is equipped with a standard Board of Water Supply staff gage.

The records here published have been furnished by J. Waldo Smith, Chief Engineer, Board of Water Supply of the city of New York.

Mean Daily Discharge, Second-feet, of Rondout Creek, including D & H. Canal, at Rosendale, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	1,056	391	501	2,072	773	213	370	100	550	454	821	220
2	2,155	364	421	1,310	741	248	208	147	486	1,118	757	232
3	3,882	358	370	1,073	685	260	208	94	335	877	709	304
4	2,234	340	352	1,136	629	236	232	82	184	717	629	405
5	1,403	316	328	1,765	581	181	208	97	275	645	581	733
6	840	391	316	3,022	533	228	256	100	393	477	669	741
7	823	364	340	2,840	509	371	268	104	359	1,734	765	701
8	674	377	358	2,840	469	934	196	94	305	1,218	741	725
9	625	364	421	2,448	533	662	178	82	398	805	725	693
10	570	352	377	2,060	501	510	170	116	550	669	725	677
11	524	316	358	1,699	473	935	147	88	790	597	725	661
12	598	304	391	1,424	457	2,269	129	97	527	565	853	629
13	668	304	429	1,271	457	3,749	108	66	335	533	1,019	605
14	1,208	322	437	1,320	456	3,403	88	68	305	501	917	645
15	1,162	279	405	2,714	441	2,625	82	73	341	391	837	965
16	577	268	413	2,192	408	1,236	66	54	347	316	853	1,787
17	573	268	1,127	1,523	401	917	70	39	293	298	853	1,820
18	688	398	1,091	1,330	498	805	138	25	215	4,051	2,240	1,391
19	715	525	693	1,310	770	709	135	36	179	7,702	2,370	1,091
20	584	469	661	2,168	426	669	170	46	158	4,102	1,809	861
21	493	364	853	2,024	357	581	147	36	146	3,476	1,413	983
22	444	322	1,181	1,699	296	469	116	39	182	5,700	1,217	1,928
23	427	252	1,710	1,523	271	437	79	39	178	5,800	1,100	2,120
24	382	310	1,320	1,340	246	391	129	45	154	3,260	1,091	1,699
25	372	370	1,163	1,271	236	352	274	58	141	2,060	1,340	1,369
26	351	469	1,127	1,235	212	316	186	98	162	1,567	1,199	1,163
27	444	565	4,050	1,163	200	316	170	136	154	1,300	1,091	1,350
28	1,098	533	4,903	1,091	199	304	147	133	170	1,136	1,619	1,310
29	570	......	5,200	917	210	377	135	327	268	957	1,037	1,190
30	491	......	4,400	821	210	429	123	356	422	837	1,001	1,073
31	396	......	3,064	......	234	......	150	369	......	805	......	965
Mean	870	366	1,250	1,687	433	818	164	105	310	1,763	1,037	1,001

Monthly Discharge of Rondout Creek, including D. & H. Canal, at Rosendale, N. Y.
[Drainage area, 380 square miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	3,882	351	870	2.29	2.640
February	565	252	366	0.96	1.000
March	5,200	316	1,250	3.29	3.790
April	3,022	821	1,687	4.44	4.950
May	773	199	433	1.14	1.320
June	3,749	181	818	2.16	2.400
July	370	66	164	0.43	0.496
August	369	25	105	0.27	0.315
September	790	141	310	0.83	0.912
October	7,702	298	1,763	4.65	5.350
November	2,370	581	1,037	2.73	3.040
December	2,120	220	1,001	2.64	3.040

RONDOUT CREEK AT LACKAWACK, N. Y.

Rondout creek above its junction with Sandberg creek (called also Lackawack creek) at Napanoch is essentially a mountain stream. At Honk falls a natural declivity affords a falls of 125 feet over tilted strata of Hudson river shale. This fall has been increased to 147.5 feet by the construction of a masonry dam at the head of the gorge.

On May 1, 1910, an automatic gage was established at Lackawack, which is situated a short distance above Honk falls, at which place a record was previously maintained. The records of flow at this gaging station have been furnished for publication by Mr. J. Waldo Smith, Chief Engineer of the Board of Water Supply of the city of New York.

Mean Daily Discharge, Second-feet, of Rondout Creek at Lackawack, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	304	117	106	344	238	135	62	39	106	131	264	274
2.....	621	132	104	277	308	84	63	32	72	334	212	258
3.....	1,118	125	96	261	240	66	70	30	55	197	190	245
4.....	643	148	83	238	212	62	59	30	42	195	187	229
5.....	404	172	73	380	190	70	49	33	34	170	170	210
6.....	242	140	74	1,180	176	158	54	33	85	150	190	205
7.....	237	299	70	1,114	164	143	91	43	98	330	322	197
8.....	194	290	68	716	156	229	52	42	86	252	229	192
9.....	180	308	78	585	150	142	49	35	135	202	197	190
10.....	164	340	107	494	144	116	50	28	140	178	186	194
11.....	151	269	124	453	140	194	44	29	110	166	184	191
12.....	172	225	134	417	134	646	42	25	102	156	200	183
13.....	192	194	143	394	129	977	39	18	74	146	310	178
14.....	348	200	169	840	122	598	40	25	64	137	229	170
15.....	317	230	330	1,057	116	380	50	20	69	135	236	215
16.....	166	203	243	710	109	304	56	20	91	125	220	327
17.....	165	250	169	508	106	263	52	18	76	122	202	400
18.....	198	286	149	390	106	212	46	22	67	910	690	309
19.....	206	250	126	341	129	176	42	23	59	1,159	525	266
20.....	168	188	130	595	102	152	40	21	54	690	387	243
21.....	142	185	157	450	90	132	43	26	50	648	336	229
22.....	128	180	259	451	91	120	36	24	78	910	291	254
23.....	123	175	392	375	77	112	21	24	70	1,400	267	684
24.....	110	166	188	340	78	100	88	18	60	768	315	453
25.....	107	179	157	306	78	100	83	31	55	530	305	368
26.....	101	206	191	286	70	100	55	40	65	425	261	322
27.....	128	315	1,918	273	70	99	42	38	66	368	236	405
28.....	316	124	1,426	266	64	99	39	39	63	306	225	329
29.....	164	......	568	248	56	80	38	194	111	279	413	256
30.....	143	......	1,055	238	53	70	37	119	145	246	306	254
31.....	114	......	514	......	57	......	38	104	......	247	......	235
Mean...	251	210	304	484	128	204	51	39	79	387	276	273

Monthly Discharge of Rondout Creek at Lackawack, N. Y.
[Drainage area, 104 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	1,118	101	251	2.41	2.780
February	340	117	210	2.02	2.110
March	1,918	68	304	2.92	3.370
April	1,180	238	484	4.65	5.200
May	308	53	128	1.23	1.420
June	977	62	204	1.96	2.190
July	91	21	51	0.49	0.565
August	194	18	39	0.38	0.438
September	145	34	79	0.76	0.852
October	1,400	122	387	3.72	4.300
November	690	170	276	2.66	2.970
December	684	170	273	2.62	3.030

ESOPUS CREEK DRAINAGE BASIN.

DESCRIPTION.

Esopus creek has its source in Winnisook lake on the northwestern slope of Slide mountain, the highest peak of the Catskills.

From Big Indian to Olive Bridge the stream flows through a deep valley, flanked on both sides by timber-covered mountains. Numerous sites for dams or storage reservoirs are offered at points where the valley broadens out for a short distance to receive the inflowing waters of tributaries. The most notable are at Big Indian, where Birch creek enters; at the mouth of Bush kill, at Shandaken; at the mouth of Stone Clove creek, at Phoenicia; at Cold Brook, where Little Beaver kill enters, and at Olive Bridge. The stream channel is relatively broad and shallow. The bed is covered with cobbles and small boulders left behind after the erosion of drift deposits which formerly filled the valley. The descent of the stream is rapid, though not precipitous, until Olive Bridge is reached. At this point, the stream flows over a rock ledge in a narrow gorge, forming Bishop's falls. The natural fall is 22 feet and is increased to 28 feet by a timber dam on the crest of the ledge. This dam was originally constructed in 1828. The drainage basin of Esopus creek is mostly shown on the Rosendale, Slide Mountain, Phoenicia and the Kaatterskill quadrangles of the U. S. Geological Survey topographic maps. This stream is of great economical importance, owing to its relatively large yield and its location adjacent to the city of New York, and it has been adopted for the city's water supply. The Ashokan dam and reservoir are now in process of construction by the city. Ashokan dam crosses Esopus creek about one mile downstream from Bishop's falls.

ESOPUS CREEK AT MT. MARION, N. Y.

A gaging station was established on Esopus creek at Mt. Marion on April 4, 1907, by the Board of Water Supply of the city of New York. The bed of the stream at this station is rock and the flow is chiefly confined to a narrow, V-shaped, natural trough during low water. The channel is straight for a considerable distance above and below the bridge. The flow is confined to the main channel at all stages of the stream.

Records here published have been furnished by Mr. J. Waldo Smith, Chief Engineer of the Board of Water Supply.

Mean Daily Discharge, Second-feet, of Esopus Creek at Mt. Marion, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	575	480	575	1,590	900	182	173	155	550	151	810	810
2	1,390	469	475	1,259	1,021	169	164	146	335	443	700	780
3	2,500	446	335	1,070	951	164	155	138	178	565	615	735
4	2,676	818	247	930	810	155	146	130	135	427	565	715
5	1,550	980	234	1,000	715	169	234	130	120	387	525	575
6	1,231	559	210	2,480	635	200	222	130	288	355	475	575
7	1,000	700	200	3,660	565	312	210	151	355	325	1,231	585
8	810	700	182	2,580	515	1,000	200	146	335	828	930	515
9	965	639	173	2,280	455	810	200	138	455	650	780	500
10	725	680	191	2,200	435	675	200	130	550	550	725	475
11	600	530	260	1,950	415	575	237	122	550	485	685	475
12	525	433	355	1,707	395	585	222	115	550	265	665	455
13	615	496	355	1,406	375	4,225	206	108	447	387	1,049	455
14	900	412	403	1,566	347	3,618	200	97	387	335	912	415
15	979	376	700	1,833	318	2,700	191	94	355	312	930	443
16	750	458	1,070	1,797	303	2,013	187	94	229	288	[illegible]	700
17	585	558	870	1,510	303	1,454	173	94	210	288	852	1,231
18	475	639	585	1,301	288	1,105	191	101	196	1,091	1,430	1,000
19	409	508	475	1,105	288	792	182	101	182	7,500	1,995	870
20	391	399	443	1,390	273	600	173	101	173	4,932	1,617	750
21	391	356	725	1,315	260	515	173	94	164	3,346	1,350	685
22	373	366	888	1,245	247	443	164	94	164	4,375	1,189	700
23	338	378	840	1,119	234	387	164	94	155	4,932	965	1,815
24	301	402	768	1,021	234	318	260	101	146	3,562	965	1,743
25	273	445	725	912	222	282	239	105	138	2,430	1,035	1,430
26	259	680	685	951	206	255	215	111	135	1,887	840	1,259
27	259	843	2,844	1,021	200	234	195	111	130	1,510	768	1,350
28	665	480	5,220	1,000	182	215	177	155	127	1,280	715	1,210
29	550	......	2,724	965	173	200	164	347	135	1,105	979	780
30	475	......	3,660	951	164	187	164	525	155	930	852	768
31	375	......	2,085	......	164	......	164	550	......	780	......	750
Mean	784	544	952	1,504	406	818	192	152	268	1,506	936	824

Monthly Discharge of Esopus Creek at Mt. Marion, N. Y.
[Drainage area, 378 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	2,676	259	784	2.07	2.380
February	980	356	544	1.44	1.500
March	5,220	173	952	2.52	2.910
April	3,660	912	1,504	3.98	4.440
May	1,021	164	406	1.07	1.240
June	4,225	155	818	2.17	2.420
July	260	146	192	0.51	0.586
August	550	94	152	0.40	0.464
September	550	120	268	0.71	0.790
October	7,500	151	1,506	3.99	4.600
November	1,995	475	936	2.48	2.760
December	1,815	415	824	2.18	2.520

ESOPUS CREEK AT WEIR NEAR OLIVE BRIDGE, N. Y.

The weir is constructed of concrete, having a cross-section similar to that experimented on in the hydraulic laboratory at Cornell University by the United States Geological Survey, in Series 30, described in Water Supply and Irrigation Paper No. 200. *a*

The average height of this weir above the rock on which it is founded for its entire length is 7.54 feet; length between abutments, 193.90 feet. In order to form a channel of approach, the abutments have been extended upstream at right angles with the axis of the weir for a distance of 16 feet and the area of the channel of approach below the crest of the weir is 1,462 square feet. The abutments extend 14 feet above the level of the crest and it is estimated that a flow of 40,000 cubic feet per second can be taken care of.

Measurements of the head on the weir are made in a well 24 inches in diameter, situated 53 feet upstream from the crest of the weir. Water is admitted to this well through a $\frac{3}{4}$-inch pipe extending 16 feet out into the stream, in which, spaced 6 inches apart, are $\frac{1}{8}$-inch holes bored vertically through the pipe. The center of this pipe is placed 18 inches above the bed of the stream. A continuous record of the head at this point is kept by means of a Friez automatic water-stage register, geared 1 to 1 and running twenty-four hours. Observations of the flow were first begun on October 17, 1906, though the automatic gage register was not installed until December 5. Prior to this latter date heads were read three times daily and reduced in the usual manner

Computations of the discharge over this weir are made from a formula which has been deduced from the results of the experiments made by the United States Geological Survey and referred to above. During the winter the ice which forms between the wing walls that form the channel of approach is kept away so that there may be no change in the conditions of flow due to this cause.

The watershed of Esopus creek above the weir is 239 square miles, as measured on the topographic maps of the United States Geological Survey.

The records here published have been furnished by J. Waldo Smith, Chief Engineer, Board of Water Supply of New York City.

a "Weir Experiments, Coefficients and Formulas," by Robert E. Horton.

Mean Daily Discharge, Second-feet, of Esopus Creek at Weir near Olive Bridge, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	542	308	264	872	683	172	152	92	150	139	512	491
2.....	1,191	301	256	705	818	128	130	78	86	399	437	475
3.....	2,350	286	235	598	757	113	128	78	58	277	392	456
4.....	1,707	525	235	556	662	108	119	78	44	256	375	428
5.....	1,191	630	286	862	580	127	208	75	38	277	336	358
6.....	874	358	294	2,082	527	228	256	72	194	235	346	351
7.....	785	448	144	2,727	475	304	194	81	228	475	708	323
8.....	620	448	169	1,923	443	646	146	80	201	437	512	345
9.....	560	410	278	1,564	398	387	130	70	297	375	448	366
10.....	392	437	333	1,255	375	292	144	62	306	326	446	366
11.....	375	340	215	1,118	345	292	119	64	291	301	502	350
12.....	437	278	228	989	322	974	105	67	267	271	636	340
13.....	475	319	228	901	322	2,482	100	67	216	255	666	333
14.....	550	264	256	990	304	1,906	100	60	173	228	590	312
15.....	600	242	312	1,471	282	1,449	110	60	163	217	630	340
16.....	420	294	358	1,250	271	1,052	122	53	173	206	590	483
17.....	340	358	264	1,020	256	736	122	64	158	200	542	658
18.....	350	410	271	856	256	566	127	62	150	2,150	1,054	550
19.....	358	326	222	748	264	472	106	66	155	3,810	1,030	502
20.....	375	256	294	856	235	412	105	66	137	2,570	868	452
21.....	366	228	333	792	218	345	105	53	168	2,005	776	437
22.....	312	235	467	750	198	313	110	53	136	2,134	694	525
23.....	264	242	785	690	185	292	102	53	143	2,593	610	1,191
24.....	235	258	420	620	187	252	187	53	134	1,930	600	967
25.....	249	286	366	563	185	222	160	53	124	1,427	585	850
26.....	256	437	375	554	166	202	122	72	133	1,141	491	785
27.....	271	542	1,930	598	153	188	113	78	124	967	448	840
28.....	467	308	2,680	674	144	175	105	97	124	798	410	743
29.....	366	......	1,454	720	130	150	105	351	124	658	566	600
30.....	375	......	1,870	696	128	139	105	272	127	580	525	512
31.....	294	......	1,178	......	113	......	102	202	......	532	......	600
Mean...	579	349	548	1,000	336	504	130	88	159	909	578	527

Monthly Discharge of Esopus Creek at Weir near Olive Bridge, N. Y.
[Drainage area, 239 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	2,350	235	579	2.42	2.800
February	630	228	349	1.46	1.530
March	2,680	144	548	2.29	2.660
April	2,727	554	1,000	4.18	4.670
May	818	113	336	1.41	1.620
June	2,482	108	504	2.11	2.360
July	256	100	130	0.54	0.629
August	351	53	88	0.37	0.421
September	306	38	159	0.67	0.740
October	3,810	139	909	3.80	4.390
November	1,054	336	578	2.42	2.700
December	1,191	312	527	2.21	2.550

CATSKILL CREEK DRAINAGE BASIN.

DESCRIPTION.

The basin of this stream receives the run-off from the north slope of the Catskill range and lies, for the most part, in the timbered highlands of Greene county. The slopes are precipitous, there are no lakes, and the amount of artificial storage is small. The underlying rock formation is chiefly Devonian shale. The topography of the area is shown on the Durham, Coxsackie and Catskill sheets of the United States Geological Survey topographic atlas. The stream flows over a rock bed through much of its course and enters tide-water of Hudson river at Catskill.

CATSKILL CREEK AT OAK HILL, N. Y.

Obstructions having been placed in the stream channel adjacent to the former gaging station on Catskill creek at South Cairo, a new station was established by the Board of Water Supply of New York City April 22, 1910, at Oak Hill, N. Y. The village of Oak Hill is about 12 miles upstream, following the creek channel, from South Cairo. The conditions at this gaging station are stated to be favorable for securing accurate results. The drainage basin in this vicinity is underlaid by Hudson river shale rock and while the stream is somewhat torrential and flashy in its regimen, it is believed that fairly accurate results are obtainable at this gaging station.

The results here presented have been furnished for publication by J. Waldo Smith, Chief Engineer of the Board of Water Supply.

Mean Daily Discharge, Second-feet, of Catskill Creek at Oak Hill, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	75	56	88	140	107	7	17	3	4	3	80	65
2.....	218	39	52	88	155	7	12	2	4	5	68	57
3.....	402	39	58	88	127	6	11	2	3	5	54	52
4.....	140	39	43	78	107	6	9	2	2	6	51	50
5.....	116	47	35	255	97	8	8	1	2	6	51	38
6.....	88	32	35	988	80	62	8	1	6	6	49	39
7.....	84	47	32	625	77	117	7	2	4	9	45	39
8.....	75	39	28	315	68	163	6	2	7	16	45	39
9.....	69	32	32	261	65	99	6	2	10	14	45	33
10.....	52	29	32	300	65	68	5	1	20	11	45	39
11.....	55	29	58	250	54	257	4	1	14	11	45	49
12.....	126	29	58	225	49	891	4	1	8	8	45	51
13.....	88	29	82	205	46	1,650	4	1	8	8	92	51
14.....	205	29	94	242	39	731	4	1	6	6	68	46
15.....	170	29	140	324	39	506	6	1	6	6	65	54
16.....	88	23	88	210	30	376	6	1	6	6	54	113
17.....	88	23	82	185	27	280	5	1	5	6	58	225
18.....	69	528	58	164	26	191	5	1	4	8	235	154
19.....	63	180	58	150	39	155	4	1	4	92	159	117
20.....	58	63	120	200	58	107	4	1	4	154	117	83
21.....	50	52	88	185	41	83	4	1	4	123	101	93
22.....	43	50	345	180	30	68	3	1	4	129	82	80
23.....	35	41	185	176	28	62	2	1	4	286	72	454
24.....	32	35	150	156	28	51	4	1	3	170	77	203
25.....	32	230	110	136	28	52	4	1	3	150	80	163
26.....	28	180	88	136	26	49	3	2	3	117	68	141
27.....	28	300	625	124	20	44	3	1	3	91	65	263
28.....	210	88	330	120	16	40	3	2	2	88	65	148
29.....	94	......	205	116	12	30	3	5	2	77	107	113
30.....	85	......	180	110	11	23	3	4	3	68	72	97
31.....	43	......	160	......	11	......	3	4	......	72	......	93
Mean...	97	83	121	224	52	206	5	2	5	57	75	105

Monthly Discharge of Catskill Creek at Oak Hill, N. Y.
[Drainage area, 97 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	402	28	97	1.00	1.180
February	528	23	83	0.86	0.895
March	625	28	121	1.25	1.430
April	988	78	224	2.31	2.580
May	155	11	52	0.54	0.616
June	1,650	6	206	2.12	2.370
July	17	2	5	0.05	0.068
August	5	1	2	0.02	0.023
September	20	2	5	0.05	0.066
October	286	3	57	0.59	0.677
November	235	45	75	0.77	0.867
December	454	33	105	1.08	1.249

KINDERHOOK CREEK.

KINDERHOOK CREEK AT ROSSMAN, N. Y.

A gaging station was established at Rossman highway bridge on Kinderhook creek, March 17, 1906, by Robert E. Horton. This gaging station is maintained by the U. S. Geological Sur-

vey in coöperation with this Department. The gage is of the weight-tape-and-reel pattern, and readings are taken morning, noon and evening by Wesley Ham.

The channel is rock, and is nearly straight for some distance above and below the gage.

The station is about one-quarter mile below a dam, and very little ice obstruction occurs except in extreme cold weather.

A description of Kinderhook creek, with the results of gagings made in 1892–1894, may be found in the report of the State Engineer and Surveyor for 1902, supplement, pages 252–256.

Accurate computation of the diurnal fluctuation of discharge, caused by the operation of the mills above the station, has been rendered impossible by insufficient funds. It is proposed to install an automatic gage to determine the relation between the daily gage heights theretofore recorded and the true mean gage heights, thus making possible the publication of accurate computations of daily discharge from the inception of the station to date. The gage heights for 1911 are withheld, pending this investigation, since no gage heights recorded at this station are true indices of the daily discharge.

MOHAWK RIVER DRAINAGE BASIN.

DESCRIPTION.

Mohawk river, the largest of the tributaries of the Hudson river, rises in the sandy hills south of Boonville, in western New York, about 40 miles from the east end of Lake Ontario. Its uppermost tributaries are fed by large springs, and in addition the stream receives considerable water brought in from the adjacent Black river drainage basin for the supply of the Black River and Erie canals.

The Mohawk flows southward until it reaches the city of Rome, at which point it turns to the east, flowing across the state in a course a little south of east until it enters the Hudson at Cohoes, a few miles above Troy. It has a length by actual course of 140 to 145 miles, and a drainage area, measured at the mouth, of about 3,468 square miles, according to U. S. Geological Survey topographic maps.

The immediate valley of the Mohawk is broad and open, at many places a mile or two in width, from which there is a rise, usually gradual but sometimes abrupt, to hills which attain altitudes several hundred feet above the stream. Toward the mouth of the river the valley becomes more contracted and the meadows disappear. The flats which border the stream have a rich alluvial soil; the more elevated lands are covered with gravelly loam and clay.

Above Rome the Mohawk flows through a deep gorge in shale rock; from Rome eastward to Little Falls the valley is deeply filled with alluvial deposits, and the flood plains on either side become submerged during freshets, thus acting to some extent as storage reservoirs. At Little Falls the river cuts through a rocky gorge, whose walls rise precipitously 500 or 600 feet.

Below Rome the fall of the river is small and rather uniform, being made up of long quiet reaches with slight riffles; but at Little Falls this uniformity is broken, and the stream descends in a succession of falls about 45 feet in 2,500. The average fall between Rome and the lower aqueduct at Crescent, a distance of 110.7 miles, is 2.43 feet per mile; thence to the level of slack water above Troy dam there is a farther descent of 149.5 feet in 4.4 miles, but of this 105 feet is included within the improved power at Cohoes.

The principal tributaries of the Mohawk below the source are, successively, Oriskany, West Canada, East Canada and Schoharie creeks.

The Erie canal runs parallel to the Mohawk through most of its course below Rome and derives a part of its water-supply from the river. Feeder dams for purposes of diversions are located on the river at Delta, Rome, Little Falls, Rocky Rift and Rexford Flats. A dam at Oriskany creek also diverts into the canal a portion of the flow of that tributary, as well as waters brought into the Mohawk basin from storage reservoirs located in the upper drainage basin of Chenango river near Hamilton, N. Y. There is also a diversion dam near the mouth of Schoharie creek, the largest tributary of the Mohawk.

Drainage Areas of Mohawk River and Tributaries.
(From U. S. G. S. topographic maps.)

LIMITS.	AREA IN SQUARE MILES.			
	Place to place.	Sub-total.	Branch total.	Total.
Lansingkill.				
Source to junction with West branch	29.41	....	29.41	....
MOHAWK RIVER.				
Source of West branch to junction with East branch	19.25	19.25	....	....
Source of East branch to junction with West branch	15.16	34.41	....	....
Junction of East and West branches to and including first large creek to north	5.86	40.27	....	....
First creek below junction to and including second large creek to north	6.08	46.35	....	....
Second creek below junction to junction of Lansing kill, Hillside	3.40	49.75	49.75	79.16
Junction at Hillside to mouth of Stringer brook	1.17	....	....	80.33
Stringer Brook.				
Source to mouth	13.43	....	13.43	93.73
MOHAWK RIVER.				
Junction of Stringer brook to mouth of Big brook (Frenchville)	3.02	....	....	96.78
Big Brook.				
Source to mouth	22.86	....	22.86	119.64
MOHAWK RIVER.				
Junction of Big brook (Frenchville) to State feeder dam at Delta	16.25	....	....	135.89
State feeder dam at Delta to highway bridge below new Delta dam	11.97	....	....	147.86
Highway bridge below new Delta dam to Ridge Mills dam	7.74	....	....	155.60
Ridge Mills dam to Floyd Ave. bridge	2.59	....	....	158.19
Floyd Ave. bridge to State dam at Rome	2.55	....	....	160.74
State dam at Rome to mouth of Six-Mile creek	26.40	....	....	187.14
Six-Mile Creek.				
Source to mouth	14.94	....	14.94	202.03
MOHAWK RIVER.				
Mouth of Six-Mile creek to mouth of Nine-Mile creek	5.29	....	....	207.37
Nine-Mile Creek.				
Source to South Trenton	19.62	....	....	....
South Trenton to crossing of 500-foot contour	6.54	26.16	....	....
Crossing of 500-foot contour to first bridge above Holland Patent	2.49	28.65	....	....
First bridge above Holland Patent to first bridge below Holland Patent	12.71	41.36	....	....
First bridge below Holland Patent to Stittville	6.12	47.48	....	....
Stittville to first bridge below Stittville (Powell's bridge)	11.59	59.07	....	....
Powell's bridge to third bridge below Stittville	10.34	69.41	....	....
Third bridge below Stittville to mouth	0.79	70.20	70.20	277.57
MOHAWK RIVER.				
Mouth of Nine-Mile creek to mouth of Oriskany creek	6.19	....	....	283.76
*Areas diverted from Chenango river basin.**				
Chenango river from source to junction with Eaton brook at Eaton	25.25	....	....	25.25
Eaton brook from source to Eaton reservoir dam	9.16	9.16	....	....
Eaton reservoir dam to junction with Chenango river at Eaton	6.69	15.85	15.85	41.10
Chenango river, junction Eaton brook to head of feeder canal	2.99	....	....	44.09

* Not included in totals for Mohawk river areas.

Drainage Areas of Mohawk River and Tributaries—(Continued).
(From U. S. G. S. topographic maps.)

LIMITS.	AREA IN SQUARE MILES.			
	Place to place.	Sub-total.	Branch total.	Total.
Areas diverted from Chenango river basin — (Con).				
Bradley brook from source to Bradley reservoir dam	3.04	....	....	....
Bradley reservoir dam to head of feeder canal	4.57	7.61	....	....
Kingsley brook from source to Kingsley reservoir dam	5.12	....	....	....
Kingsley reservoir dam to junction with Bradley brook feeder canal	1.75	6.87	14.48	58.57
Head of feeder, Chenango river to junction of feeders, Woodman pond	2.04	....	....	60.61
Payne brook from source to Madison reservoir dam	8.73	....	....	....
Madison reservoir dam to junction of feeders, Woodman pond	2.04	10.77	10.77	71.38
Junction of feeders, Woodman pond to junction with Leland pond outlet	3.26	....	....	74.64
Source, Leland creek to canal reservoir dam	6.74	....	....	81.38
Junction with Leland pond outlet to natural watershed limits	6.53	....	....	87.91
Oriskany Creek.				
Source of Oriskany creek to bridge at Solsville	7.84	....	....	....
Solsville to Oriskany Mills	13.27	21.11	....	....
Oriskany Mills to junction with Big creek (Deansboro)	16.54	37.65	....	....
Source of Big creek to junction with Oriskany creek (Deansboro)	20.32	57.97	....	....
Junction with Big creek to Farmers Mills	14.09	72.06	....	....
Farmers Mills to Clinton	11.11	83.17	....	....
Clinton to Kirkland	4.73	87.90	....	....
Kirkland to dam above Clark Mills	5.76	93.66	....	....
Dam above Clark Mills to Walesville	9.92	103.58	....	....
Walesville to Colemans	36.99	140.57	....	....
Colemans to State dam above Oriskany	5.47	146.04	....	....
State dam above Oriskany to mouth of Oriskany creek	0.78	146.82	146.82	430.58
MOHAWK RIVER.				
Mouth of Oriskany creek to mouth of Sauquoit creek	15.68	....	....	446.26
Sauquoit Creek.				
Source of Sauquoit creek to Cassville	7.17	....	....	....
Cassville to dam at Clayville	4.71	11.88	....	....
Dam at Clayville to dam at Sauquoit	12.54	24.42	....	....
Dam at Sauquoit to dam above Chadwick	4.28	28.70	....	....
Dam above Chadwick to 700-foot contour at Willowvale	3.72	32.42	....	....
700-foot contour at Willowvale to dam at Washington Mills	11.37	43.79	....	....
Dam at Washington Mills to dam above New Hartford	2.92	46.71	....	....
Dam above New Hartford to dam at Capron	1.52	48.23	....	....
Dam at Capron to dam below Capron	2.20	50.43	....	....
Dam below Capron to upper dam at New York Mills	0.49	50.92	....	....
Upper dam at New York Mills to mouth of Sauquoit creek	14.58	65.50	65.50	511.76
MOHAWK RIVER.				
Mouth of Sauquoit creek to Black River R. R. bridge at Utica	13.09	....	....	524.85
Black River R. R. bridge at Utica to mouth of Reels creek	2.70	....	....	527.55
Reels Creek.				
Source to mouth	9.69	....	9.69	537.24
Ballou Creek.				
Source to mouth	4.57	....	4.57	541.8[illegible]

Drainage Areas of Mohawk River and Tributaries — (Continued).
(From U. S. G. S. topographic maps.)

LIMITS.	AREA IN SQUARE MILES.			
	Place to place.	Sub-total.	Branch total.	Total.
MOHAWK RIVER.				
Mouth of Ballou creek to mouth of Starch Factory creek	1.99	....	....	543.80
Starch Factory Creek.				
Source to mouth	7.22	....	....	551.02
MOHAWK RIVER.				
Mouth of Starch Factory creek to mouth of Sterling creek	30.93	....	....	581.95
Sterling Creek.				
Source to mouth	19.94	....	....	601.89
MOHAWK RIVER.				
Mouth of Sterling creek to mouth of Moyer creek.	14.85	....	....	616.74
Moyer Creek.				
Source to mouth	21.66	....	....	638.40
MOHAWK RIVER.				
Mouth of Moyer creek to mouth of Steels creek	7.30	....	....	645.70
Steels Creek.				
Source to mouth	29.54	....	....	674.24
MOHAWK RIVER.				
Mouth of Steels creek to Mohawk-Herkimer road bridge	33.07	....	....	707.31
Mohawk-Herkimer road bridge to mouth of West Canada creek	7.51	....	....	714.82
*West Canada Creek.**				
Source to mouth	583.64	....	....	1,298.46
MOHAWK RIVER.				
Mouth of West Canada creek to State dam at Little Falls	26.07	....	....	1,324.53
State dam at Little Falls to Gilberts dam	4.20	....	....	1,328.73
Gilberts dam to Rocky Rift feeder dam	11.82	....	....	1,340.55
Crum Creek.				
Source to mouth	11.40	....	....	1,351.95
MOHAWK RIVER.				
Mouth of Crum creek (feeder dam) to mouth of Nowadaga creek	0.27	....	....	1,352.22
Nowadaga Creek.				
Source to mouth	32.43	....	....	1,384.65
MOHAWK RIVER.				
Mouth of Nowadaga creek to mouth of East Canada creek	4.65	....	....	1,389.30
*East Canada Creek.**				
Source to mouth	281.61	....	....	1,670.91
MOHAWK RIVER.				
Mouth of East Canada creek to mouth of East Crum creek	0.59	....	....	1,671.50
East Crum Creek.				
Source to mouth	15.55	....	....	1,687.05
MOHAWK RIVER.				
Mouth of East Crum creek to mouth of Timmerman creek	3.31	....	....	1,690.36

* For subareas, see separate table.

Drainage Areas of Mohawk River and Tributaries — (Continued).
(From U. S. G. S. topographic maps.)

LIMITS.	Area in Square Miles.			
	Place to place.	Sub-total.	Branch total.	Total.
Timmerman Creek.				
Source to mouth	16.38	....	....	1,706.74
MOHAWK RIVER.				
Mouth of Timmerman creek to mouth of Zimmerman creek	0.52	....	....	1,707.26
Zimmerman Creek.				
Source to mouth	14.63	....	....	1,721.89
MOHAWK RIVER.				
Mouth of Zimmerman creek to St. Johnsville bridge	0.54	....	....	1,722.43
St. Johnsville bridge to mouth of Garoga creek	12.05	....	....	1,734.48
Garoga Creek.				
Source of Garoga creek to foot of East Garoga lake	10.44	....	....	....
Foot of East Garoga lake to foot of pond, Newkirk Mills	3.18	13.62	....	....
Foot of pond, Newkirk Mills, to junction with Peck lake outlet	9.11	22.73	22.73	....
Source of Woodworth lake to foot of Peck lake	16.29	....	....	....
Foot of Peck lake to junction with Garoga creek	4.52	20.81	43.54	....
Junction with Peck lake outlet to Rockwood	7.20	....	50.74	....
Rockwood to Garoga	2.19	....	52.93	....
Garoga to mouth of Sprite creek	4.99	....	57.92	....
Source of Sprite creek to mouth	14.13	....	72.05	....
Mouth of Sprite creek to fourth highway bridge above mouth	13.19	....	85.24	....
Fourth highway bridge above mouth to second highway bridge above mouth	7.78	....	93.02	....
Second highway bridge above mouth to first highway bridge above mouth	1.17	....	94.19	....
First highway bridge above mouth to mouth of Garoga creek	0.51	....	94.70	1,829.18
MOHAWK RIVER.				
Mouth of Garoga creek to Fort Plain	12.70	....	....	1,841.88
Fort Plain to Canajoharie	67.92	....	....	1,909.80
Canajoharie Creek.				
Source to mouth	69.22	....	69.22	1,979.02
MOHAWK RIVER:				
Canajoharie to Sprakers	9.94	....	....	1,988.96
Flat Creek.				
Source to mouth	49.11	....	49.11	2,038.07
MOHAWK RIVER.				
Sprakers to mouth of Yatesville creek	17.56	....	....	2,055.63
Yatesville Creek.				
Source to mouth	12.71	....	12.71	2,068.34
MOHAWK RIVER.				
Mouth of Yatesville creek to mouth of Cayadutta creek	24.48	....	....	2,092.82
Cayadutta Creek.				
Source of Cayadutta creek to Johnstown (Main street bridge)	35.16	....	....	....
Johnstown (Main street bridge) to dam above Sammonsville	2.84	38.00	....	....
Dam above Sammonsville to dam at Sammonsville	3.53	41.53	....	....
Dam at Sammonsville to dam two miles below Sammonsville	16.44	57.97	....	....
Dam below Sammonsville to mouth of Cayadutta creek	5.06	63.03	63.03	2,155.85

Drainage Areas of Mohawk River and Tributaries — (Concluded).
(From U. S. G. S. topographic maps.)

LIMITS.	AREA IN SQUARE MILES.			
	Place to place.	Sub-total.	Branch total.	Total.
MOHAWK RIVER.				
Mouth of Cayadutta creek to Fultonville bridge..	0.68	....	....	2,156.53
Fultonville bridge to mouth of Schoharie creek...	47.39	....	....	2,203.92
*Schoharie Creek.**				
Source to mouth..........	909.30	....	....	3,113.22
MOHAWK RIVER.				
Mouth of Schoharie creek to mouth of Chuctanunda creek (Amsterdam)..........	31.54	....	....	3,144.73
South Chuctanunda Creek.				
Source to Minaville..........	22.62	22.62	....	....
Minaville to mouth..........	10.41	33.03	33.03	3,177.79
North Chuctanunda Creek.				
Source to dam, Amsterdam reservoir..........	8.76	8.76	....	....
Dam, Amsterdam reservoir, to Hagaman	20.77	29.53	....	....
Hagaman to Rockton..........	4.11	33.64	....	....
Rockton to mouth..........	5.58	39.22	39.22	3,217.01
MOHAWK RIVER.				
Amsterdam to Hoffman Ferry..........	43.59	....	....	3,260.60
Hoffman Ferry to Scotia bridge..........	52.44	....	....	3,313.04
Scotia bridge to mouth of Alplaus kill..........	24.37	....	....	3,337.41
Alplaus Kill.				
Source to mouth..........	55.80	....	55.80	3,393.21
MOHAWK RIVER.				
Mouth of Alplaus kill to Rexford Flats dam.....	1.23	....	....	3,394.44
Rexford Flats dam to Vischer's Ferry dam......	10.98	....	....	3,405.42
Vischer's Ferry dam to Dunsbach Ferry dam....	53.20	....	....	3,458.62
Dunsbach Ferry dam to Crescent aqueduct......	10.25	....	....	3,468.87
Crescent aqueduct to Crescent dam..........	2.68	....	....	3,471.55
Crescent dam to Cohoes Co.'s dam..........	0.61	....	....	3,472.16
Cohoes Co.'s dam to mouth of Mohawk river....	12.68	....	....	3,484.84

* For subareas see separate table.

Table showing Drainage Areas used previous to 1910 *in estimating Run-off of Mohawk River and Tributaries at certain Gaging Stations; together with latest determination of these Areas from U. S. Geological Survey Topographic Maps.*

STREAM.	Gaging station.	DRAINAGE AREAS IN SQUARE MILES	
		Formerly used.	From U. S. G. S. maps.
Mohawk river........	Cohoes dam..........	3,456	3,472.2
	Dunsbach Ferry..........	3,440	3,458.6
	Rexford Flats..........	3,385	3,391.4
	Schenectady, Freemans bridge....	3,321	....
	Scotia bridge........	....	3,313.0
	Amsterdam..........	....	3,217.0
	Tribes Hill..........	....	3,113.2
	Fonda-Fultonville..........	....	2,156.5
	Fort Plain..........	....	1,841.9
	Rocky Rift dam..........	1,351	1,340.6
	Little Falls..........	1,306	1,328.7
	Herkimer..........	....	707.3
	Utica, Black River R. R. bridge...	500	524.8
	Rome, State dam..........	148 (1906)	160.0
	Floyd Ave. bridge........	....	158.2
	Ridge Mills..........	152.5 (U. S. D. W.)	155.6

Table showing Drainage Areas used previous to 1910 *in estimating Run-off of Mohawk River and Tributaries at certain Gaging Stations; together with latest determination of these Areas from U. S. Geological Survey Topographic Maps* — (Continued).

STREAM.	Gaging station.	DRAINAGE AREAS IN SQUARE MILES.	
		Formerly used.	From U. S. G. S. maps.
Schoharie creek	Fort Hunter	947	909.3
	Schoharie Falls	930	....
	Middleburg	....	527.4
	Prattsville	243	238.4
Cayadutta creek	Near Johnstown	40	41.5
Garoga creek	Near Fort Plain	80.8	....
East Canada creek	Dolgeville	256	....
West Canada creek	Kast Bridge	574 (1903)	574.8
	Poland	....	470.1
	Middleville	519 (U. S. D. W.)	527.3
	Trenton Falls	375	375.8
	Twin Rock bridge	364	364.4
Sauquoit creek	New York Mills	51.5	50.9
Oriskany creek	State feeder dam	144	146.0
Nine-Mile creek	Stittville, Powell's bridge	62.6	59.1

MOHAWK RIVER WATER-SURFACE ELEVATION RECORDS.

The following tables give records of the mean daily elevation of water-surface of the Mohawk river at different gaging stations for 1911. The elevations are referred to Barge canal datum, which is equivalent to mean tide at New York, taken as elevation 14.73 below the old grist mill bench-mark at Greenbush (Rensselaer).

The tables of elevations of water-surface are arranged in order proceeding upstream from the junction of the Mohawk river with the Hudson river at Waterford, to Delta.

An accompanying table gives details as to the types of gages used, the datum of each and the manner in which they are read.

Water-surface Elevation Gages Maintained on Mohawk River and Tributaries During the Year 1911.

LOCATION.	Date established.	Observer.	Elevation of zero mark (B. C. datum).	Type of gage.	Subdivision of gage	Readings taken to
Mohawk river.						
Waterford	Jan. 15, 1907	Barge canal employee	0.00	Staff	$\frac{1}{10}$ Foot	$\frac{1}{10}$ Foot
Cohoes	Dec. —, 1903	James Murphy	*a*153.47	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Dunsbach Ferry, Emerick	Mar. 12, 1898	Robert Wilson	172.23	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Rexford Flats, above dam	Dec. 8, 1898	J. Reepmeyer, Jr	208.16	Chain	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Schenectady	April 3, 1904	W. C. Vrooman	208.66	Staff	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Tribes Hill	Jan. 7, 1904	Clarence Hanson	263.71	Chain	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Fultonville	April 29, 1906	Ed. P. Ryan	268.69	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Canajoharie	Sept. 16, 1908	John J. Lyons	280.45	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Fort Plain	Dec. 30, 1905	Frank Fayant	288.66	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Little Falls, Paper Co.'s tail-race	1898	C. V. Barrett	320.72	Staff	Inch	Inch
Little Falls, Paper Co.'s head-race	"	"	330.92	"	$\frac{1}{10}$ Foot	$\frac{1}{10}$ Foot
Little Falls, Astoronga tail-race	1908	Edw. Haggarty	317.70	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Little Falls, Astoronga head-race	"	John Burns	333.14	"	Inch	Inch
Little Falls, above State dam	1898	John Stark	362.28	"	$\frac{1}{10}$ Foot	$\frac{1}{10}$ Foot
Herkimer	Nov. 23, 1904	Raymond Waterbury	377.43	"	$\frac{1}{10}$ "	$\frac{1}{100}$ "
Utica	Mar. 15, 1905	W. E. Young	393.14	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Rome, below dam	May 3, 1904	John Phillips	426.46	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Rome, above dam	"	" "	429.73	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Rome, Floyd avenue	July 9, 1907	G. G. Williams	445.01	Chain	$\frac{1}{10}$ "	$\frac{1}{100}$ "
Ridge Mills, below dam	May 3, 1904	Daniel Brown	456.20	Staff	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Ridge Mills, above dam	"	" "	465.22	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Delta, at lock No. 7	Aug. 20, 1905	E. A. Hurlbut	479.10	Chain	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Delta, above dam	May 3, 1904	E. A. Evans	507.55	Staff	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Schoharie creek.						
Fort Hunter	Sept. 24, 1898	H. A. Hockel	277.50	Chain	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Central Bridge	April 3, 1904	A. M. Spencer	*b*565.96	"	$\frac{1}{10}$ "	$\frac{1}{100}$ "
Middleburg	Aug. 24, 1906	Minnie E. Wheeler	*	Staff	$\frac{1}{10}$ "	$\frac{1}{100}$ "
East Canada creek.						
Dolgeville, below dam	1898	Godfrey Aman	*	"	$\frac{1}{10}$ "	$\frac{1}{100}$ "
Dolgeville, above dam	"	" "	*	"	$\frac{1}{10}$ "	$\frac{1}{100}$ "
West Canada creek.						
Kast Bridge	May 15, 1904	Floyd Kast	414.24	Tape	$\frac{1}{100}$ "	$\frac{1}{100}$ "
Poland	July 3, 1908	Clarence Fitch	*	Chain	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Trenton Falls, Morgan dam	Feb. 8, 1904	Chas. W. Young	751.26	Staff	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Trenton Falls, Power Co.'s dam	"	" "	1,009.48	"	Inch	Inch
Grant, Twin Rock bridge	Sept. 7, 1909	Frank McArthur	1,135.07	Tape	$\frac{1}{100}$ Foot	$\frac{1}{100}$ Foot
Near Wilmurt	June 28, 1909	Ray Hubbard	*	Chain	$\frac{1}{10}$ "	$\frac{1}{10}$ "
Nine-Mile creek — Stittville	Nov. 4, 1905	Maria Powell	481.72	"	$\frac{1}{10}$ "	$\frac{1}{10}$ "

* Arbitrary datum. *a* Weather Bureau datum. *b* U. S. G. S. datum.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River at Waterford, N. Y

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	16.25	16.60	16.55	16.75	18.20	13.85	13.80	14.45	15.00	14.50	15.15	16.10
2.....	16.60	16.00	16.10	16.25	18.50	13.85	14.00	14.30	15.15	14.55	15.40	15.85
3.....	17.50	16.30	16.05	16.05	19.30	14.05	13.95	13.80	15.50	15.20	15.40	15.60
4.....	18.80	15.85	16.20	15.70	18.75	14.25	13.80	14.85	15.40	15.30	15.25	15.45
5.....	17.80	15.95	16.20	15.80	17.55	14.50	13.55	13.95	15.05	15.50	15.10	15.00
6.....	17.25	15.75	15.70	18.40	16.85	14.55	13.55	14.80	14.90	15.90	15.10	14.90
7.....	16.90	16.15	15.70	20.10	16.35	14.65	14.25	14.45	15.10	16.10	15.00	14.65
8.....	16.95	15.90	15.50	19.85	16.35	15.15	14.95	14.30	15.45	16.15	15.25	14.65
9.....	16.65	15.70	15.30	19.20	15.75	15.15	15.05	13.95	16.20	16.25	15.40	14.75
10.....	16.10	15.80	15.50	18.80	15.75	15.00	15.00	14.35	16.05	16.05	15.40	14.85
11.....	16.20	15.70	15.60	18.35	15.55	14.55	14.85	14.35	16.90	15.75	15.55	15.40
12.....	16.25	15.80	15.60	18.05	15.40	14.70	14.75	14.55	16.35	15.40	15.60	15.70
13.....	16.15	15.70	15.75	17.95	15.20	15.25	14.75	15.15	15.95	14.95	15.95	16.15
14.....	16.35	15.60	16.25	18.20	15.00	16.35	14.35	14.30	15.90	14.55	15.10	17.35
15.....	16.30	14.75	17.05	19.45	15.00	16.45	14.35	13.65	15.95	14.50	16.25	17.50
16.....	16.20	15.60	17.65	19.80	14.45	15.95	14.95	14.05	15.75	14.25	15.80	17.25
17.....	16.15	15.30	17.25	19.60	14.40	15.65	15.05	14.15	15.65	14.25	15.40	17.70
18.....	15.85	15.30	16.60	18.85	14.20	15.20	15.15	15.05	15.45	14.45	15.40	17.60
19.....	15.75	15.80	16.15	18.05	14.40	14.95	15.00	15.25	15.50	15.95	16.75	16.90
20.....	15.55	16.00	16.30	17.65	14.45	14.70	14.35	14.85	15.10	17.35	17.05	16.80
21.....	15.45	16.00	16.35	17.50	14.35	14.55	15.15	14.80	14.30	16.85	16.80	15.80
22.....	15.70	15.75	16.40	17.50	14.55	14.25	15.15	14.20	14.20	16.60	16.25	15.50
23.....	15.50	15.85	15.95	17.45	14.50	14.30	15.25	14.25	14.10	16.80	15.65	16.10
24.....	15.80	15.75	17.25	17.25	14.30	14.25	15.15	14.05	14.60	17.60	15.65	18.75
25.....	15.65	15.65	16.60	16.90	14.65	14.20	14.80	14.10	14.20	17.00	15.60	18.20
26.....	15.35	15.90	16.05	17.15	14.90	14.00	14.65	14.10	14.05	16.35	15.65	17.00
27.....	15.55	16.30	17.95	17.65	14.80	13.95	14.75	15.10	13.80	15.95	15.55	17.20
28.....	17.40	16.90	19.50	17.90	14.60	13.90	13.95	15.00	13.80	15.65	15.30	17.20
29.....	17.45	......	18.85	17.60	14.65	14.00	13.90	14.50	14.30	15.40	15.30	16.45
30.....	17.05	......	18.40	18.25	14.20	13.80	14.65	15.00	14.20	15.35	15.90	16.55
31.....	16.55	......	18.20	......	14.10	......	14.40	14.90	......	15.05	......	16.75

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River above Dam at Cohoes, N. Y.

DAY.	Jan.*a*	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	......	*a*	155.52	155.82	156.12	154.57	154.72	156.27	159.02	158.82	159.37	159.32
2.....	......	*a*	155.27	155.92	156.22	154.42	154.77	155.42	158.97	158.87	159.12	159.22
3.....	......	*a*	155.02	155.67	156.72	155.02	154.47	155.02	159.02	159.17	159.02	159.42
4.....	......	*a*	155.02	155.37	156.32	154.97	154.47	154.57	158.92	159.12	158.97	158.42
5.....	......	*a*	155.02	155.47	155.92	154.67	154.02	154.27	158.82	159.12	159.02	157.42
6.....	......	*a*	154.82	157.07	155.62	155.02	153.87	155.37	158.92	159.72	158.87	157.92
7.....	......	*a*	154.77	157.97	155.42	155.92	153.47	154.92	158.87	159.82	158.62	157.67
8.....	......	*a*	154.67	157.77	155.12	155.62	153.82	152.82	159.47	160.02	158.82	157.52
9.....	......	*a*	154.62	157.52	155.07	155.42	154.47	154.32	159.72	159.62	159.07	157.87
10.....	......	154.67	154.62	157.02	155.07	154.92	153.47	153.07	160.27	159.52	159.17	158.57
11.....	......	154.97	154.82	156.77	155.07	155.07	153.37	153.07	160.07	159.37	159.22	159.02
12.....	......	155.22	154.97	156.62	154.87	154.87	153.37	154.32	159.72	159.27	159.12	159.37
13.....	......	154.92	155.07	156.57	154.87	155.47	153.27	153.57	159.47	159.27	159.02	159.52
14.....	......	154.87	155.32	156.57	154.87	156.32	153.42	153.32	159.17	159.17	159.32	159.87
15.....	......	154.77	155.97	157.32	154.67	156.12	153.32	153.22	159.42	159.32	159.22	159.62
16.....	......	154.87	155.97	157.42	154.57	155.67	153.27	153.17	159.37	159.12	159.07	159.62
17.....	......	154.72	155.72	157.12	154.42	155.22	153.67	152.72	159.32	159.07	158.92	159.92
18.....	......	154.82	155.42	156.62	154.42	155.37	153.62	152.72	159.07	159.02	158.97	159.67
19.....	......	154.97	155.32	156.42	154.47	155.12	153.27	152.32	158.97	159.47	159.72	159.32
20.....	......	155.17	155.17	156.17	154.52	154.97	155.77	152.62	158.42	160.02	159.67	158.82
21.....	......	154.97	155.17	156.02	154.72	154.82	158.32	152.57	154.17	159.92	159.72	158.47
22.....	......	155.02	155.42	156.17	154.62	154.67	158.32	152.52	154.92	160.02	159.37	157.52
23.....	......	154.92	156.07	156.07	154.72	154.67	158.37	153.37	154.77	159.57	159.07	157.87
24.....	......	154.72	156.82	155.87	154.67	154.77	157.57	153.37	157.07	160.37	159.07	160.02
25.....	......	154.87	155.92	155.72	154.87	154.72	156.42	153.22	158.57	160.02	158.97	159.62
26.....	......	155.12	156.17	155.77	155.12	154.57	154.07	153.77	158.57	159.52	158.87	159.07
27.....	......	155.12	156.07	156.02	155.07	154.42	153.22	158.07	158.37	159.22	158.72	158.82
28.....	......	155.77	157.77	156.07	154.92	154.47	153.57	157.77	158.37	159.02	158.67	158.82
29.....	......	......	157.52	156.17	154.67	154.67	154.62	156.62	157.07	159.07	158.57	158.62
30.....	......	......	157.12	156.32	154.77	154.72	157.92	155.12	157.02	158.32	159.72	157,72
31.....	......	......	156.87	......	154.47	......	157.42	158.37	......	158.12	......	157.17

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River at Dunsbach Ferry, N. Y.

DAY.	Jan.	Feb.	Mar.	Apri	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	175.98	175.88	175.93	176.83	177.14	174.68	174.68	174.03	174.98	174.58	175.23	175.13
2.....	175.63	175.78	175.98	176.43	177.70	174.63	174.63	174.08	174.98	174.73	175.13	175.03
3.....	175.73	175.73	175.68	176.13	177.25	174.63	174.58	174.03	174.88	174.88	175.13	175.03
4.....	176.98	175.73	175.53	175.88	177.19	174.63	174.53	173.93	174.68	175.03	175.23	174.98
5.....	176.93	175.63	175.53	175.93	176.28	174.68	174.38	173.93	174.63	175.13	175.33	174.93
6.....	176.43	175.63	175.43	177.85	175.98	175.08	174.23	173.93	174.63	175.28	175.43	174.88
7.....	176.08	175.58	175.43	179.20	175.68	176.63	174.23	173.93	174.83	175.18	175.48	174.83
8.....	175.78	175.53	175.38	178.70	175.58	176.83	174.18	173.93	175.23	175.03	175.53	174.93
9.....	175.63	175.53	175.33	178.30	175.53	176.33	174.13	173.88	175.63	174.98	175.63	175.08
10.....	175.48	175.48	175.28	178.00	175.43	175.63	174.13	173.83	175.68	174.83	175.68	175.38
11.....	175.33	175.43	175.18	177.65	175.38	175.23	174.13	173.93	175.38	174.83	175.78	176.03
12.....	175.33	175.33	175.13	177.35	175.18	175.53	174.13	173.93	175.13	174.83	176.03	176.43
13.....	175.43	175.28	175.23	177.80	175.03	176.23	174.08	174.03	175.03	174.83	175.93	176.78
14.....	175.53	175.13	175.38	178.35	175.03	176.83	174.03	174.08	175.03	174.83	175.83	176.98
15.....	175.68	175.03	175.73	178.45	174.93	176.73	174.03	174.13	174.93	174.83	175.83	177.15
16.....	175.68	174.93	176.28	178.25	174.83	176.18	174.03	174.03	174.83	174.83	175.73	177.08
17.....	175.53	174.93	176.38	177.95	174.78	175.58	174.03	174.03	174.78	174.73	175.73	177.15
18.....	175.48	174.98	176.33	177.85	174.73	175.23	174.03	173.93	174.73	174.73	175.98	177.30
19.....	175.33	175.13	176.43	177.75	174.63	175.13	174.03	173.83	174.73	175.13	176.48	177.15
20.....	175.23	175.33	176.53	177.70	174.53	175.03	174.23	173.83	174.63	176.58	176.88	176.83
21.....	175.03	175.43	176.43	177.65	174.43	174.98	174.53	173.88	174.58	176.28	176.78	176.08
22.....	174.93	175.43	176.38	177.65	174.48	174.93	174.43	173.93	174.53	176.13	176.53	175.53
23.....	174.88	175.33	176.33	177.20	174.68	174.83	174.33	173.93	174.53	176.13	176.33	175.78
24.....	174.83	175.23	176.28	176.63	174.98	174.73	174.28	173.93	174.53	176.03	176.23	178.05
25.....	174.78	175.13	176.28	176.28	175.53	174.73	174.18	173.93	174.53	175.98	176.03	177.80
26.....	174.78	175.23	176.48	175.98	175.58	174.73	174.03	173.93	174.43	175.83	175.98	177.30
27.....	174.88	175.43	176.98	175.73	175.33	174.93	174.03	173.93	174.43	175.73	175.88	176.78
28.....	175.33	175.58	177.60	176.33	175.18	174.93	174.13	173.93	174.43	175.68	175.73	176.53
29.....	175.88	......	179.10	176.78	174.88	174.83	174.13	173.93	174.43	175.53	175.53	176.53
30.....	176.03	......	178.15	176.63	174.78	174.73	174.03	173.98	174.43	175.38	175.43	176.43
31.....	175.93	......	177.20	......	174.73	......	174.08	174.43	......	175.28	......	176.28

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River above State Dam at Rexford Flats, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	209.92	210.27	210.21	211.61	210.21	210.06	209.61	209.96	210.41	209.94	210.19	210.89
2.....	210.27	210.12	210.01	211.21	211.46	210.31	209.46	209.96	210.16	209.94	210.24	210.79
3.....	211.07	210.02	209.86	210.86	211.51	210.56	209.36	209.96	210.06	210.79	210.49	210.64
4.....	211.57	209.92	209.71	210.41	211.36	210.31	*a*	209.96	210.01	211.04	210.64	210.49
5.....	211.17	209.82	209.56	210.86	211.01	210.06	209.16	209.96	209.96	211.69	210.74	210.39
6.....	210.77	209.77	209.46	213.61	210.66	211.46	209.51	209.96	210.06	212.29	211.14	210.24
7.....	210.42	209.72	209.36	213.61	210.26	211.86	210.01	209.86	210.46	211.84	211.19	210.19
8.....	210.27	209.62	209.36	213.16	210.06	211.36	210.11	209.86	211.51	*a*	211.44	210.14
9.....	210.12	*a*	209.36	212.56	209.96	210.96	210.03	209.86	211.96	211.94	211.19	210.14
10.....	210.07	*a*	209.36	212.21	209.86	210.61	210.06	209.86	212.06	211.59	211.04	210.14
11.....	210.02	209.42	209.36	212.11	209.76	210.31	210.03	209.86	211.41	211.29	210.99	210.64
12.....	210.02	209.37	209.36	211.81	209.66	210.26	210.06	209.86	210.66	210.99	210.94	211.84
13.....	209.92	209.26	209.36	211.56	209.56	211.71	210.03	209.86	210.46	210.64	211.04	212.44
14.....	209.92	209.26	209.76	212.06	209.46	212.11	210.03	209.86	210.36	210.29	210.89	213.04
15.....	209.97	209.26	210.81	212.96	209.36	211.56	209.96	209.86	210.26	210.24	*a*	212.59
16.....	209.92	209.26	210.71	212.91	209.56	210.91	209.96	209.86	210.11	210.29	*a*	212.29
17.....	209.92	209.26	210.61	212.61	209.56	210.51	209.96	209.86	210.06	211.24	210.74	211.99
18.....	209.92	209.46	210.41	211.96	209.56	210.31	210.06	209.86	209.96	212.09	210.64	211.54
19.....	209.92	209.56	209.96	211.31	209.56	210.21	210.06	209.86	209.96	212.79	210.74	211.24
20.....	209.92	209.46	209.66	211.16	209.56	210.01	210.03	209.86	209.86	212.94	210.84	211.04
21.....	209.92	209.46	209.96	211.01	209.56	209.81	210.03	209.86	209.86	212.69	210.99	211.14
22.....	209.92	209.46	210.76	210.86	209.76	209.61	210.03	209.86	209.86	212.24	211.04	211.94
23.....	209.92	209.46	211.31	210.76	209.96	209.56	210.03	209.86	209.86	213.04	210.94	212.59
24.....	209.92	209.36	210.96	210.71	209.96	209.56	210.06	209.86	209.86	213.19	210.94	212.54
25.....	209.97	209.36	210.81	210.56	210.91	209.56	210.06	209.86	209.86	212.84	210.89	212.29
26.....	210.02	209.56	210.66	210.41	211.16	209.48	210.06	209.86	209.86	212.14	210.84	211.74
27.....	210.12	210.01	211.21	210.11	210.91	209.46	210.06	209.91	209.86	211.74	210.74	211.19
28.....	210.22	210.66	213.51	210.01	210.61	209.61	210.06	209.96	209.86	211.29	210.74	210.94
29.....	210.37	......	212.96	209.96	210.11	209.91	210.11	210.01	209.86	211.09	210.99	210.84
30.....	210.77	......	212.41	209.96	210.06	209.76	210.03	210.26	209.86	210.79	211.04	210.84
31.....	210.6[illegible]	......	211.91	......	210.06	......	210.06	210.51	......	210.44	......	210.74

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River at Schenectady, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	210.26	211.26	211.16	212.71	212.36	209.86	209.71	210.01	211.06	209.86	211.56	212.01
2.....	210.11	211.06	211.06	211.46	213.01	210.16	209.56	209.96	210.81	210.16	211.81	211.56
3.....	212.81	210.86	211.06	211.16	212.96	211.01	209.46	209.96	210.76	210.91	211.26	211.16
4.....	212.51	210.66	211.06	210.66	213.36	210.71	209.36	209.96	210.66	211.46	211.01	210.81
5.....	213.46	210.46	211.06	210.86	211.61	210.36	209.26	209.96	210.66	212.31	210.81	210.01
6.....	212.46	210.46	210.96	216.56	210.96	211.81	209.16	209.96	210.71	212.56	210.66	211.06
7.....	212.26	210.66	210.86	216.96	210.61	212.51	210.16	209.96	211.01	212.31	210.91	210.16
8.....	212.21	210.46	210.76	216.16	210.36	211.81	210.16	209.96	211.91	212.76	211.41	210.16
9.....	211.86	210.46	210.66	215.51	210.36	211.46	210.16	209.96	212.51	212.51	212.03	210.36
10.....	211.26	210.46	210.66	214.36	210.26	210.81	210.16	210.06	213.06	211.91	211.56	210.66
11.....	211.06	210.46	210.66	214.11	210.21	210.46	210.16	210.21	212.41	211.71	211.56	211.81
12.....	210.96	210.46	210.16	213.81	209.96	210.41	210.16	210.36	211.01	211.26	211.56	212.26
13.....	210.86	210.46	210.06	213.61	209.71	212.16	210.16	210.26	210.51	210.91	211.56	213.41
14.....	210.76	210.46	210.66	213.71	209.51	213.51	210.16	210.16	210.56	210.46	212.11	214.36
15.....	210.66	210.46	211.41	215.56	209.46	212.46	210.16	210.06	210.61	210.36	211.81	213.66
16.....	210.66	210.46	212.16	215.41	209.46	211.56	210.16	209.96	210.31	210.36	211.06	213.51
17.....	210.66	210.46	211.16	214.51	209.46	211.16	210.06	209.96	210.46	210.36	211.06	214.31
18.....	210.66	210.46	210.41	213.46	209.46	210.76	209.96	209.96	210.76	210.61	212.06	213.61
19.....	210.66	210.46	210.16	212.61	209.56	210.46	210.26	209.86	210.61	212.61	213.56	212.81
20.....	210.66	210.46	210.06	212.41	209.76	210.21	210.11	209.86	210.26	213.56	213.26	211.91
21.....	210.66	210.46	210.26	212.26	210.16	209.96	210.11	209.96	210.06	213.36	213.06	211.06
22.....	210.66	210.46	210.41	212.21	210.06	209.91	209.96	209.96	209.96	212.91	212.36	210.76
23.....	210.46	210.46	211.46	212.16	209.81	209.76	209.81	209.96	209.96	213.91	211.56	211.91
24.....	210.46	210.46	212.41	211.76	210.21	209.71	209.71	209.96	209.96	213.96	211.26	214.86
25.....	210.31	209.66	211.26	211.61	211.36	209.66	209.56	209.96	209.96	213.26	211.31	213.56
26.....	210.21	209.66	211.06	212.01	211.46	209.56	210.06	209.96	209.96	212.26	211.36	212.81
27.....	210.06	210.16	212.36	212.26	211.31	209.46	210.06	209.96	209.96	211.61	210.96	212.51
28.....	210.06	211.26	216.51	212.36	210.31	209.76	210.06	209.96	209.86	211.26	211.06	212.41
29.....	211.66	......	215.26	212.46	210.06	210.06	210.06	210.11	209.86	210.91	211.51	211.51
30.....	211.36	......	214.81	212.36	209.96	209.96	210.06	210.51	209.86	210.76	212.31	211.16
31.....	211.36	......	213.66	......	209.86	......	210.06	211.21	......	210.46	......	211.06

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River at Tribes Hill, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	268.68	269.18	269.50	270.81	270.11	268.36	268.51	267.71	268.41	268.41	269.26	270.31
2.....	268.88	269.18	269.50	270.36	272.11	269.46	268.31	267.71	268.26	268.86	269.51	270.36
3.....	272.51	269.13	269.50	269.86	272.01	269.21	268.21	267.71	268.11	269.11	269.31	270.11
4.....	272.73	269.18	269.50	269.71	270.86	268.81	268.21	267.71	268.21	269.21	269.21	269.81
5.....	271.98	269.28	269.50	270.11	270.36	268.71	268.11	267.66	268.31	269.81	269.21	269.56
6.....	271.33	269.23	269.50	273.86	269.96	270.96	268.01	267.61	268.31	269.91	269.26	269.31
7.....	270.93	269.18	269.50	274.21	269.71	270.81	267.91	267.61	268.41	269.91	269.41	269.11
8.....	270.78	269.18	269.60	273.61	269.56	270.21	267.91	267.71	269.01	269.71	269.86	269.01
9.....	270.63	269.18	269.55	273.26	269.51	269.81	267.91	267.71	269.81	269.71	270.51	269.01
10.....	270.48	269.13	269.60	272.46	269.46	269.36	267.91	267.81	270.31	269.41	270.56	269.36
11.....	270.43	269.18	269.60	272.36	269.21	269.11	267.91	267.86	270.21	269.11	270.51	269.81
12.....	270.18	269.18	269.60	272.21	269.11	269.96	267.91	267.91	269.81	268.91	270.61	271.26
13.....	270.08	269.28	269.70	272.16	269.06	271.16	267.91	267.91	269.06	268.66	270.56	271.96
14.....	270.08	269.23	270.31	272.36	268.66	271.81	267.91	267.81	268.71	268.51	270.31	272.06
15.....	270.08	269.18	271.06	273.51	268.51	271.06	267.86	267.71	268.51	268.51	270.11	272.06
16.....	269.98	269.23	270.71	273.26	268.51	270.51	267.81	267.71	268.71	268.36	270.21	271.81
17.....	269.88	269.18	270.36	272.66	268.51	270.01	267.71	267.71	268.71	268.31	270.56	271.81
18.....	269.83	269.18	270.21	271.81	268.31	269.76	267.71	267.71	268.71	268.81	271.06	271.31
19.....	269.68	269.18	270.21	271.26	268.31	269.41	267.71	267.71	268.61	270.06	271.26	270.36
20.....	269.68	269.18	270.51	271.11	268.31	269.21	267.81	267.71	268.36	271.11	271.31	269.76
21.....	269.58	269.18	270.96	271.06	268.71	268.91	268.01	267.71	268.21	270.51	271.06	269.51
22.....	269.48	269.28	271.41	270.96	268.61	268.71	268.01	267.71	268.21	270.81	270.81	270.31
23.....	269.38	269.38	271.56	271.01	268.51	268.66	267.81	267.71	268.21	271.71	270.50	272.56
24.....	269.38	269.38	270.96	270.71	269.11	268.51	267.71	267.71	268.21	271.66	270.21	272.21
25.....	269.28	269.38	270.46	270.51	269.81	268.46	267.71	267.71	268.21	271.26	270.01	271.81
26.....	269.23	269.38	270.61	270.56	269.66	268.41	267.71	267.71	268.21	270.51	269.71	271.71
27.....	269.18	269.43	272.61	271.11	269.31	268.41	267.71	267.71	268.21	269.71	269.91	271.21
28.....	269.28	269.48	276.21	270.96	268.86	269.01	267.71	267.71	268.16	269.36	270.06	270.86
29.....	269.28	......	273.61	271.06	268.71	269.11	267.71	268.01	268.16	269.31	270.26	270.46
30.....	269.28	......	274.11	271.01	268.51	268.81	267.21	268.61	268.31	269.11	270.31	270.01
31.....	269.28	......	274.01	......	268.31	......	267.71	268.56	......	268.96	......	269.71

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Schoharie Creek at Fort Hunter, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	281.80	280.55	281.20	*a*	282.00	279.95	281.35	278.95	281.20	279.30	281.80	281.95
2.....	282.25	280.40	281.10	*a*	282.35	279.85	281.15	278.85	280.60	279.25	281.80	281.90
3.....	283.10	280.20	281.00	*a*	282.35	279.80	280.75	278.75	280.05	279.20	281.70	281.85
4.....	283.90	280.20	281.10	*a*	282.30	279.75	280.35	278.65	279.65	280.50	281.70	281.80
5.....	282.75	279.80	281.20	*a*	282.15	280.10	280.15	278.60	279.35	281.45	281.60	281.70
6.....	282.30	279.70	281.15	*a*	281.95	281.20	280.00	278.50	279.40	281.20	281.60	281.70
7.....	281.45	279.45	281.00	*a*	281.80	281.55	279.95	278.55	279.55	281.50	281.60	281.60
8.....	281.30	279.65	281.05	*a*	281.80	281.75	279.75	278.60	280.15	281.45	281.60	281.60
9.....	281.20	279.60	281.15	*a*	281.80	282.00	279.70	279.00	281.40	281.40	281.50	281.60
10.....	280.90	279.40	281.25	*a*	281.75	281.70	279.70	279.10	281.65	281.30	281.50	281.70
11.....	280.80	279.35	281.25	*a*	281.65	281.80	279.70	278.95	281.65	281.10	281.55	281.70
12.....	280.70	279.30	281.30	*a*	281.60	282.60	279.65	278.85	281.60	281.00	281.75	281.90
13.....	280.85	279.25	281.15	*a*	281.55	283.25	279.45	278.70	281.50	280.85	282.00	282.20
14.....	281.20	279.30	281.25	*a*	281.50	283.40	279.35	278.60	281.45	280.70	282.30	281.90
15.....	281.60	279.05	281.30	*a*	281.50	282.85	279.30	278.60	281.40	280.60	282.00	281.80
16.....	281.40	279.00	281.60	*a*	281.50	282.55	279.25	278.60	281.10	280.55	281.95	282.10
17.....	281.20	279.10	281.65	*a*	281.40	282.35	279.10	278.60	280.45	280.45	281.80	282.60
18.....	281.15	279.15	281.85	282.30	281.40	282.10	278.95	278.60	280.05	280.50	281.75	282.30
19.....	281.30	279.40	281.40	282.25	281.40	282.05	279.20	278.65	279.95	281.80	282.50	282.05
20.....	280.70	279.40	281.80	282.20	281.45	281.85	279.30	278.65	279.75	282.65	282.40	282.00
21.....	280.55	279.50	281.70	282.20	281.50	281.30	279.15	278.60	279.50	282.20	282.25	281.90
22.....	280.50	279.65	282.00	282.20	281.50	281.75	279.05	278.60	279.50	282.30	282.20	281.85
23.....	280.40	279.80	282.55	282.20	281.45	281.70	278.95	278.55	279.40	282.95	282.10	282.15
24.....	280.40	280.20	282.15	282.15	281.40	281.65	279.00	278.50	279.35	282.65	282.05	282.80
25.....	280.15	280.50	281.50	282.10	281.35	281.60	279.00	278.55	279.30	282.20	282.00	282.50
26.....	280.30	281.00	281.90	282.05	281.30	281.60	279.10	278.75	279.20	281.75	281.90	282.40
27.....	281.15	281.25	283.10	282.00	281.30	281.55	279.05	278.80	279.15	281.70	281.95	282.45
28.....	281.45	281.40	283.25	282.00	281.15	281.50	278.85	278.80	279.25	281.70	282.20	282.70
29.....	281.00	......	283.05	282.00	280.80	281.50	279.00	278.95	279.40	281.70	282.25	282.25
30.....	281.10	......	282.50	282.00	280.40	281.40	279.10	279.00	279.35	281.65	282.05	282.05
31.....	280.80	......	282.15	......	280.05	......	279.00	280.35	......	281.70	......	281.95

a No record.

Mean Daily Elevation of Water-surface (U. S. G. S. Datum) of Schoharie Creek at Schoharie Junction, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	572.46	571.51	572.11	568.71	568.66	567.16	567.34	566.68	567.11	566.86	568.16	568.24
2.....	573.46	571.66	571.66	568.51	569.11	567.16	567.28	566.66	567.08	566.86	568.16	568.21
3.....	576.66	571.44	571.31	568.31	569.08	567.16	567.24	566.66	567.06	566.96	568.21	568.16
4.....	576.16	571.34	570.96	568.26	568.81	567.16	567.16	566.66	567.18	567.36	568.21	568.16
5.....	574.41	571.24	570.61	570.16	568.58	567.16	567.16	566.66	567.31	567.34	568.28	568.18
6.....	574.21	571.14	570.54	574.01	568.34	567.56	567.14	566.66	567.48	567.41	568.41	568.21
7.....	574.08	571.21	570.44	571.06	568.24	567.96	567.11	566.71	567.56	567.36	568.56	568.24
8.....	573.94	571.51	570.36	570.48	568.16	568.56	567.11	566.71	567.56	567.48	568.44	568.26
9.....	573.71	571.58	570.31	570.11	568.14	568.71	567.06	566.71	567.56	567.86	568.38	568.18
10.....	573.31	571.58	570.31	570.04	568.04	568.41	567.08	566.68	567.54	567.64	568.36	568.11
11.....	573.11	571.36	570.48	570.24	567.94	568.26	567.06	566.66	567.51	567.58	568.38	568.06
12.....	574.11	571.16	570.74	569.71	567.84	570.96	566.91	566.66	567.48	567.54	568.48	568.06
13.....	573.91	571.04	570.61	569.46	567.74	572.41	566.86	566.66	567.46	567.44	568.56	568.06
14.....	574.04	570.94	570.41	569.61	567.68	572.36	566.84	566.64	567.44	567.36	568.44	568.41
15.....	573.46	570.84	570.56	570.51	567.66	571.01	566.81	566.61	567.34	567.31	568.34	568.58
16.....	573.01	570.74	570.44	569.96	567.61	570.06	566.76	566.64	567.21	567.31	568.24	569.16
17.....	572.66	570.81	570.14	569.51	567.51	569.61	566.76	566.66	567.08	567.28	568.24	569.61
18.....	572.68	573.36	570.11	569.21	567.46	569.06	566.71	566.61	566.96	567.76	568.38	569.01
19.....	572.68	573.66	570.14	569.01	567.46	568.61	566.71	566.61	566.96	570.11	568.51	568.68
20.....	572.58	572.31	569.24	569.21	567.64	568.41	566.71	566.56	566.91	570.06	568.71	568.36
21.....	572.36	572.11	569.21	569.01	567.58	568.21	566.76	566.56	566.91	570.01	568.81	568.36
22.....	572.06	571.91	569.28	568.96	567.54	568.04	566.76	566.51	566.94	569.76	568.54	570.86
23.....	571.74	571.58	569.34	568.88	567.46	567.96	566.74	566.51	566.96	570.26	568.46	570.66
24.....	571.48	571.46	569.38	568.78	567.46	567.96	566.71	566.54	566.96	569.96	568.44	570.31
25.....	571.26	571.58	569.41	568.71	567.46	567.91	566.71	566.56	566.96	569.51	568.41	569.81
26.....	571.26	572.48	569.41	568.56	567.46	567.56	566.71	566.56	566.91	568.98	568.41	569.01
27.....	571.34	573.56	569.41	568.56	567.38	567.68	566.71	566.56	566.88	568.66	568.41	569.48
28.....	574.91	572.66	571.26	568.56	567.38	567.51	566.71	566.58	566.84	568.51	568.36	568.94
29.....	573.36	......	569.91	568.56	567.26	567.44	566.71	566.81	566.76	568.36	568.34	568.66
30.....	571.56	......	569.36	568.56	567.26	567.38	566.71	566.98	566.81	568.28	568.31	568.68
31.....	571.34	......	569.01	......	567.21	......	566.71	567.06	......	568.24	......	568.66

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River at Fultonville Bridge, Fonda, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	276.15	277.60	277.85	279.40	278.30	274.25	274.30	273.70	274.49	274.94	276.94	277.69
2.....	277.30	277.80	277.45	278.60	279.80	275.75	274.15	273.60	274.39	274.89	276.44	276.84
3.....	280.50	277.80	277.30	277.80	279.55	275.30	274.10	273.60	274.29	274.79	275.69	276.34
4.....	282.80	277.80	277.20	277.40	277.85	274.80	274.10	273.60	274.19	275.29	275.69	275.94
5.....	281.80	277.70	276.60	277.30	276.85	275.15	274.05	273.50	274.14	275.39	275.69	275.64
6.....	285.20	277.50	276.55	280.30	276.10	278.40	273.85	273.50	274.34	276.69	275.69	275.44
7.....	279.80	277.45	276.30	282.20	275.45	278.40	273.85	273.65	275.44	276.69	275.89	275.39
8.....	279.20	277.30	276.30	282.75	275.30	276.90	273.90	273.70	276.04	277.24	276.24	275.29
9.....	279.30	277.30	276.30	282.30	275.45	275.90	273.90	273.70	276.84	276.79	276.39	275.44
10.....	279.80	277.00	276.40	281.80	275.50	275.30	273.85	273.70	278.19	276.19	277.79	276.74
11.....	279.25	276.90	276.50	281.55	275.30	274.90	273.80	273.70	277.19	275.54	276.89	277.94
12.....	279.50	276.90	276.60	280.45	275.20	274.80	273.80	273.80	275.49	275.24	276.89	278.24
13.....	279.60	276.90	276.95	279.60	274.80	276.90	273.80	273.80	274.99	275.04	277.29	278.59
14.....	279.55	276.80	278.30	280.10	274.40	277.90	273.65	273.80	274.99	274.09	277.14	279.59
15.....	279.50	276.80	278.70	281.10	274.30	277.10	273.60	273.70	275.04	274.24	277.04	279.54
16.....	279.40	276.80	278.30	281.70	274.25	276.20	273.70	273.60	274.79	274.34	276.49	280.04
17.....	279.25	276.80	278.15	280.65	274.05	275.70	273.80	273.60	274.79	274.04	276.04	279.69
18.....	279.20	276.80	277.85	279.40	273.90	275.30	273.60	273.60	274.69	274.74	277.14	279.09
19.....	278.90	276.85	277.90	278.45	273.90	275.05	274.15	273.70	274.29	276.69	278.89	278.99
20.....	278.90	277.05	277.80	278.20	274.00	274.85	274.20	273.70	274.19	277.94	278.89	277.84
21.....	278.30	277.15	277.35	278.20	274.30	274.30	273.95	273.70	274.19	277.29	278.84	276.94
22.....	278.25	277.20	277.30	278.15	274.15	274.40	274.00	273.60	274.09	276.84	277.59	276.34
23.....	278.20	277.10	277.55	277.75	274.10	274.30	274.00	273.60	273.99	278.79	276.59	279.99
24.....	277.90	277.15	277.60	277.30	274.90	274.30	273.95	273.50	274.19	279.54	276.54	280.69
25.....	277.50	277.10	277.60	277.60	276.40	274.30	273.95	273.55	274.19	277.74	276.69	280.29
26.....	277.10	277.10	277.90	277.95	275.90	274.30	273.80	273.60	274.19	276.94	276.54	278.59
27.....	277.10	277.85	282.20	278.30	275.45	274.30	273.80	273.60	274.04	275.94	276.24	278.34
28.....	277.10	278.05	286.05	278.55	274.40	275.25	273.70	273.65	273.84	275.64	276.24	277.19
29.....	277.65	......	284.55	278.50	274.30	275.20	273.70	274.14	273.89	275.44	277.44	276.84
30.....	277.85	......	283.60	278.30	274.10	274.60	273.70	274.19	274.09	275.14	277.69	277.54
31.....	277.55	......	282.90	......	274.20	......	273.60	274.54	......	275.14	......	278.29

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River of Canajoharie N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	289.25	288.70	287.55	289.70	289.35	282.45	282.85	*a*	282.80	282.70	288.00	288.60
2.....	289.20	288.40	287.25	289.10	291.15	285.15	282.50	*a*	282.60	283.35	287.15	287.55
3.....	292.00	288.20	286.75	288.20	290.75	284.75	*a*	*a*	283.05	283.90	286.45	286.75
4.....	291.60	287.90	286.45	287.60	288.40	284.05	*a*	*a*	282.70	284.25	286.50	286.25
5.....	291.10	287.75	286.25	287.25	287.20	284.25	*a*	*a*	282.55	286.00	286.45	288.00
6.....	290.70	287.65	286.05	292.15	286.40	289.30	*a*	*a*	283.10	285.90	286.30	286.35
7.....	290.20	287.55	285.85	293.85	286.20	287.90	*a*	*a*	285.00	285.75	286.30	285.85
8.....	289.50	287.45	285.75	293.55	285.70	286.30	*a*	*a*	285.75	285.75	287.25	285.85
9.....	289.05	287.45	285.90	292.80	285.85	285.35	*a*	*a*	286.05	285.05	288.50	285.90
10.....	288.70	287.35	286.15	291.30	285.90	284.65	*a*	*a*	286.75	284.65	287.65	287.45
11.....	288.70	287.30	286.35	291.25	285.20	284.20	*a*	*a*	285.65	284.25	287.35	288.85
12.....	288.95	287.25	286.65	291.10	284.90	284.15	*a*	*a*	283.90	283.70	287.30	289.45
13.....	289.05	287.20	287.25	291.15	284.25	287.20	*a*	*a*	284.00	283.55	288.50	291.55
14.....	288.85	287.05	288.55	291.70	284.10	287.85	*a*	*a*	284.55	283.25	288.50	292.70
15.....	288.85	286.95	289.60	293.75	283.90	287.25	*a*	*a*	283.80	283.25	287.50	291.15
16.....	288.90	286.80	289.15	293.65	283.80	285.65	*a*	*a*	283.60	283.15	287.35	290.65
17.....	288.80	286.65	288.15	292.05	283.05	285.30	*a*	*a*	283.30	283.20	286.95	291.50
18.....	288.80	287.20	287.85	290.35	282.60	284.80	*a*	*a*	282.90	283.15	287.10	290.35
19.....	288.35	288.35	287.90	289.35	282.45	284.30	*a*	*a*	282.75	284.20	290.25	289.20
20.....	288.00	288.40	287.80	289.25	283.45	283.90	*a*	*a*	282.65	286.35	290.00	287.50
21.....	288.05	288.05	287.65	289.40	283.80	283.45	*a*	*a*	282.65	285.80	289.35	286.45
22.....	287.90	287.65	287.45	289.25	283.60	283.05	*a*	*a*	282.65	285.35	288.55	286.40
23.....	287.70	287.25	288.75	288.95	283.45	283.05	*a*	*a*	282.55	287.55	287.60	292.15
24.....	287.40	287.05	288.60	288.65	285.65	283.00	*a*	*a*	282.55	288.25	287.40	292.50
25.....	287.10	286.90	287.95	288.25	286.35	282.85	*a*	*a*	282.55	286.55	287.60	290.60
26.....	286.90	286.80	288.30	289.50	285.65	282.65	*a*	*a*	282.45	285.30	287.25	290.40
27.....	287.35	288.05	292.55	289.75	284.85	282.65	*a*	*a*	282.45	284.85	286.95	289.35
28.....	289.65	287.90	296.70	289.85	284.15	283.95	*a*	*a*	282.45	284.50	287.00	288.45
29.....	289.80	......	295.80	290.00	283.50	284.10	*a*	282.85	282.45	284.60	288.95	288.20
30.....	289.40	......	294.85	289.55	282.60	283.40	*a*	284.35	282.65	284.00	289.10	291.90
31.....	289.05	......	292.60	......	282.45	......	*a*	283.55	......	284.30	......	292.05

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River at Fort Plain, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	293.66	295.66	294.66	296.56	296.71	292.66	291.96	*a*	291.66	291.86	294.71	295.56
2.....	294.91	295.3[illegible]	294.11	295.31	298.21	294.16	291.71	*a*	291.11	294.06	294.56	295.06
3.....	299.06	295.16	293.71	294.71	297.81	293.31	291.41	*a*	291.16	293.41	293.76	294.31
4.....	298.46	295.31	293.46	294.11	295.66	292.66	291.11	*a*	291.51	293.51	293.86	294.01
5.....	297.66	295.26	293.28	293.96	294.81	293.01	291.01	*a*	291.61	295.31	293.76	293.36
6.....	297.11	295.06	293.11	300.36	294.31	296.96	290.66	*a*	291.91	294.56	293.76	293.26
7.....	296.21	294.76	292.96	299.56	294.16	295.51	290.66	*a*	293.81	295.16	293.9[illegible]	293.26
8.....	295.61	294.36	292.86	300.16	293.76	294.56	290.66	*a*	294.46	295.01	294.71	293.36
9.....	295.11	294.26	292.96	299.96	293.36	293.81	290.66	*a*	295.51	294.46	295.26	293.71
10.....	294.86	294.16	293.21	298.21	294.01	293.21	290.66	291.16	295.66	293.91	294.96	295.21
11.....	294.66	294.06	293.11	297.71	293.51	292.76	290.66	291.71	294.66	293.56	294.66	295.91
12.....	294.61	293.86	293.31	297.61	293.21	292.86	291.06	*a*	293.16	293.21	294.76	296.51
13.....	295.16	293.86	293.41	297.66	292.81	295.21	291.06	*a*	293.11	292.81	295.41	298.31
14.....	295.36	293.86	294.91	298.21	292.56	295.66	290.76	*a*	293.31	292.46	295.56	298.96
15.....	294.96	293.76	296.51	299.96	292.56	294.81	290.66	*a*	292.96	292.36	294.81	297.61
16.....	294.86	293.56	296.01	299.96	292.21	294.11	290.66	*a*	292.61	292.46	294.36	296.96
17.....	294.86	293.46	294.51	299.16	291.91	293.86	290.66	*a*	292.81	292.11	294.16	297.2[illegible]
18.....	294.66	293.56	294.46	297.21	291.76	293.51	290.81	*a*	292.51	292.96	294.91	296.76
19.....	294.41	294.71	294.11	296.41	291.16	293.21	291.96	*a*	291.71	294.81	296.71	296.01
20.....	294.16	294.96	293.61	296.21	292.21	292.81	291.66	*a*	291.81	295.21	296.56	294.96
21.....	294.06	294.51	293.71	296.41	292.36	292.41	290.96	*a*	291.66	294.71	296.11	293.81
22.....	293.96	294.01	294.46	296.21	292.21	292.21	290.66	*a*	291.26	294.51	295.41	294.01
23.....	293.96	293.81	295.76	296.21	291.96	292.06	290.66	*a*	291.91	297.11	294.96	298.21
24.....	293.61	293.66	295.26	295.36	293.41	291.91	290.66	*a*	291.96	296.36	294.46	298.11
25.....	293.36	293.56	294.76	295.51	294.61	291.76	290.66	*a*	291.76	295.56	294.61	297.06
26.....	293.16	293.81	294.76	296.61	293.96	291.71	290.66	*a*	291.66	294.46	294.46	296.41
27.....	293.16	294.36	298.86	296.76	293.36	291.86	290.66	*a*	291.56	294.01	294.21	296.01
28.....	296.91	295.16	302.51	296.91	292.71	293.06	290.66	*a*	291.31	293.56	294.51	295.71
29.....	297.01	......	302.36	297.01	292.26	292.91	290.66	289.66	291.51	293.51	295.76	295.01
30.....	296.41	......	300.96	296.91	291.81	292.36	290.66	291.56	291.66	292.86	296.11	294.36
31.....	295.86	......	298.66	......	291.91	......	290.66	292.11	......	293.71	......	294.41

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River above State Dam at Little Falls, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	364.41	364.31	364.01	364.96	365.86	364.86	363.81	*a*	*a*	*a*	*a*	*a*
2.....	364.76	364.11	364.21	364.61	366.41	364.66	363.81	*a*	*a*	*a*	*a*	*a*
3.....	365.81	364.11	364.11	364.51	366.21	364.31	363.61	*a*	*a*	*a*	*a*	*a*
4.....	365.61	364.01	364.11	364.31	364.71	364.11	363.56	*a*	*a*	*a*	*a*	*a*
5.....	365.31	364.01	364.11	364.51	364.41	364.71	363.41	*a*	*a*	*a*	*a*	*a*
6.....	364.96	364.01	363.91	365.91	364.31	365.81	363.51	*a*	*a*	*a*	*a*	*a*
7.....	364.61	364.01	363.91	367.26	364.31	365.26	363.51	*a*	*a*	*a*	*a*	*a*
8.....	364.41	364.01	363.71	367.26	364.41	364.71	363.51	*a*	*a*	*a*	*a*	*a*
9.....	364.31	364.01	363.81	366.71	364.26	364.36	363.51	*a*	*a*	*a*	*a*	*a*
10.....	364.21	364.01	364.01	366.11	364.31	364.31	363.61	*a*	*a*	*a*	*a*	*a*
11.....	364.11	363.91	363.91	365.96	364.11	364.11	363.61	*a*	*a*	*a*	*a*	*a*
12.....	364.31	363.91	363.91	365.91	364.06	364.11	363.61	*a*	*a*	*a*	365.21	*a*
13.....	364.31	363.91	364.16	365.81	363.71	365.06	363.61	*a*	*a*	*a*	365.41	*a*
14.....	364.31	363.91	364.61	366.06	363.91	365.21	363.61	*a*	*a*	*a*	365.61	*a*
15.....	364.36	363.91	364.96	366.81	363.81	364.86	363.61	*a*	*a*	*a*	365.36	*a*
16.....	364.11	363.91	364.76	366.96	363.66	364.51	363.61	*a*	*a*	*a*	364.91	*a*
17.....	364.11	364.01	364.21	366.26	363.66	364.11	364.01	*a*	*a*	*a*	365.26	366.28
18.....	363.91	364.21	364.21	365.61	363.61	364.11	364.61	*a*	*a*	*a*	365.61	366.08
19.....	363.91	364.21	364.21	365.11	363.76	364.11	364.46	*a*	*a*	*a*	*a*	365.88
20.....	363.81	364.21	364.11	365.11	364.01	364.11	364.41	*a*	*a*	*a*	*a*	365.68
21.....	364.01	364.21	364.01	365.11	364.21	363.91	364.31	*a*	*a*	*a*	*a*	365.68
22.....	363.81	364.11	364.26	365.01	363.91	363.91	364.31	*a*	*a*	*a*	*a*	366.18
23.....	363.81	364.11	364.86	364.91	363.81	363.91	364.31	*a*	*a*	*a*	*a*	367.08
24.....	363.71	364.01	364.51	364.86	364.66	363.91	364.01	*a*	*a*	*a*	*a*	367.08
25.....	363.81	363.91	364.31	364.71	364.91	363.81	364.11	*a*	*a*	*a*	*a*	366.43
26.....	363.91	364.01	364.46	365.21	364.61	363.81	364.11	*a*	*a*	*a*	*a*	365.98
27.....	363.91	363.91	366.11	365.41	364.31	363.91	364.11	*a*	*a*	*a*	*a*	365.38
28.....	365.06	363.91	367.46	365.41	364.06	364.36	364.16	*a*	*a*	*a*	*a*	365.28
29.....	364.96	......	367.21	365.66	364.01	364.31	363.71	*a*	*a*	*a*	*a*	365.08
30.....	364.96	......	366.31	365.61	363.76	364.01	363.26	*a*	*a*	*a*	*a*	364.98
31.....	364.31	......	365.66	......	363.71	......	363.01	*a*	......	*a*	......	364.98

a No record; gage cut off by Barge canal construction work.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of West Canada Creek at Kast Bridge, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	443.95	443.53	442.94	444.35	446.46	443.96	442.50	442.08	442.58	442.83	443.82	444.32
2	444.85	443.42	442.88	443.97	447.54	444.00	442.32	442.00	442.36	443.11	443.78	444.02
3	445.27	443.15	442.78	443.84	446.44	443.50	442.38	442.16	442.62	443.13	443.58	443.74
4	445.06	443.09	442.78	443.62	445.71	443.14	442.34	442.21	442.69	443.88	443.30	443.51
5	444.51	443.15	442.71	443.74	444.59	444.08	442.34	442.20	442.51	444.44	443.24	443.22
6	444.08	442.93	442.74	445.54	443.93	445.48	442.35	441.92	442.59	443.88	443.63	443.30
7	443.85	442.75	442.69	446.58	443.94	444.43	442.24	442.02	443.54	444.50	443.58	443.41
8	443.69	442.97	442.64	446.06	444.70	444.02	442.28	442.17	443.90	443.98	444.68	443.34
9	443.61	443.04	442.69	445.66	444.36	443.54	442.14	442.57	444.10	443.73	444.82	443.87
10	443.29	443.04	442.64	445.32	444.35	443.30	442.40	442.80	444.18	443.49	444.28	444.50
11	443.16	442.87	442.66	445.34	444.06	443.13	442.41	442.54	443.48	443.32	444.34	444.86
12	443.44	442.84	442.74	445.38	443.90	443.25	442.35	442.47	443.30	443.11	444.27	445.78
13	443.39	442.88	442.76	445.52	443.71	444.49	442.38	442.16	443.28	443.03	444.80	447.98
14	443.51	442.86	443.02	446.46	443.48	444.80	442.34	442.08	442.96	442.92	444.47	447.71
15	443.43	442.74	443.38	446.82	443.36	444.28	442.16	442.16	443.00	443.10	444.14	445.55
16	443.19	442.76	443.14	446.42	443.09	443.98	442.12	442.27	443.04	443.18	443.80	445.08
17	442.98	442.80	442.90	445.76	442.99	443.83	442.25	442.22	443.02	442.86	443.62	445.46
18	443.07	443.08	442.90	445.16	442.92	443.75	442.70	442.15	442.79	443.12	444.82	444.84
19	443.00	443.12	442.84	445.06	442.90	443.42	442.50	442.26	442.66	*a*	445.41	444.32
20	443.03	443.12	442.92	445.12	443.29	443.17	442.36	442.34	442.51	*a*	445.08	443.74
21	443.06	443.08	442.84	445.18	443.32	442.88	442.26	442.02	442.43	*a*	444.82	443.48
22	443.05	443.01	442.90	445.24	443.06	442.87	442.22	442.08	442.60	*a*	444.22	443.66
23	443.06	442.91	443.32	444.76	443.32	442.80	442.06	442.18	442.66	*a*	443.68	446.71
24	442.95	442.94	443.21	444.60	444.04	442.76	442.20	442.24	442.62	*a*	443.86	446.34
25	442.83	442.84	443.16	445.12	443.26	442.62	442.11	442.22	442.56	*a*	443.72	445.08
26	442.87	442.82	443.52	445.76	443.97	442.56	442.29	442.26	442.58	443.77	443.62	444.59
27	442.97	443.03	446.11	446.14	443.62	442.95	442.20	442.26	442.48	443.56	443.58	444.79
28	444.08	443.02	445.84	446.32	443.28	443.20	442.28	442.30	442.56	443.44	443.62	444.60
29	443.79	......	445.54	446.66	443.04	442.92	442.11	442.88	442.73	443.32	445.00	443.92
30	443.83	......	445.28	446.56	442.98	442.66	441.96	443.16	442.81	443.23	444.86	443.92
31	443.55	......	444.78	......	442.74	......	441.87	442.70	......	443.15	......	443.65

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of West Canada Creek above Morgan Dam at Trenton Falls, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	754.31	754.16	753.56	754.81	756.71	754.56	752.66	752.46	752.61	752.71	753.66	754.16
2	754.51	754.06	753.46	754.46	757.46	754.26	752.66	752.46	752.31	752.86	753.61	754.06
3	755.16	754.01	753.46	754.16	756.61	753.76	752.66	752.46	751.86	753.06	753.46	753.86
4	755.01	753.96	753.46	754.16	755.21	753.56	752.66	752.46	752.86	753.21	753.21	753.86
5	754.91	753.86	753.41	754.11	754.61	753.91	752.66	752.46	752.86	754.46	753.51	753.96
6	754.61	753.76	753.36	754.31	754.51	755.11	752.66	751.26	752.96	754.11	753.56	754.01
7	754.46	753.66	753.36	755.31	754.86	754.41	752.66	752.41	753.66	754.26	753.66	753.61
8	754.21	753.56	753.36	755.61	754.86	754.01	752.66	752.46	753.11	754.21	754.66	753.26
9	754.06	753.56	753.36	755.26	754.46	753.76	752.76	753.06	753.56	753.71	754.56	753.26
10	753.86	753.56	753.36	754.91	754.51	753.66	752.66	752.86	754.16	753.61	754.26	754.01
11	753.86	753.56	753.36	754.91	754.41	753.66	752.66	752.56	753.71	753.26	754.26	754.26
12	753.86	753.46	753.36	755.06	754.21	753.66	752.66	752.36	753.56	752.96	754.26	755.36
13	753.81	753.36	753.36	755.26	754.21	754.66	752.66	752.26	753.31	752.91	754.66	756.96
14	753.91	753.36	753.36	755.76	753.96	754.81	752.66	752.86	753.21	752.76	754.41	757.01
15	753.96	753.36	753.46	756.61	753.81	754.56	752.31	752.26	752.86	753.56	754.06	755.06
16	753.91	753.36	753.46	756.11	753.56	754.21	752.11	752.66	752.86	752.81	754.06	754.61
17	753.81	753.36	753.46	755.36	753.41	754.06	752.66	752.46	752.86	752.76	753.46	754.86
18	753.81	753.46	753.46	754.96	753.41	754.01	752.66	752.26	752.76	752.81	753.96	754.71
19	753.71	753.51	753.41	755.06	753.51	753.86	752.66	752.26	752.71	754.31	755.21	754.16
20	753.71	753.56	753.36	755.31	753.81	753.41	752.66	751.86	752.66	754.16	754.86	753.66
21	753.66	753.46	753.36	755.41	753.51	753.11	752.66	752.26	752.66	754.16	754.56	753.46
22	753.66	753.46	753.36	755.36	753.46	752.96	752.66	752.16	752.66	754.21	754.51	753.46
23	753.66	753.46	753.56	755.91	753.81	752.86	751.26	752.21	752.66	754.91	754.06	755.61
24	753.66	753.46	753.66	754.66	754.41	752.91	752.66	752.21	752.66	755.16	753.86	755.96
25	753.56	753.46	753.56	755.76	754.41	752.76	752.56	752.36	752.66	754.36	753.51	755.16
26	753.51	753.46	753.61	756.01	754.06	752.71	752.46	752.06	752.66	753.81	753.46	755.06
27	753.46	753.46	754.06	756.36	753.81	752.76	752.36	751.26	752.66	753.66	753.41	754.16
28	753.91	753.46	755.01	756.21	753.56	752.96	752.36	752.66	752.66	753.56	753.41	753 91
29	754.16	......	755.61	756.61	753.51	752.96	750.86	753.66	752.66	753.31	754.56	754.06
30	754.21	......	755.26	756.66	753.46	752.76	751.26	753.16	752.66	753.46	754.51	754.06
31	754.16	......	755.01	......	753.01	......	752.86	752.81	......	753.46	......	753.86

Mean Daily Elevation of Water-surface (Barge Canal Datum) of West Canada Creek above Power Co.'s Dam at Trenton Falls, N. Y.

DAY.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	1,020.81	1,019.64	1,018.86	1,020.23	1,021.60	1,019.06	1,009.06	995.77	1,005.27	1,019.52	1,019.94	1,020.31
2	1,020.73	1,019.60	1,018.94	1,020.02	1,022.77	1,018.77	1,015.69	999.36	1,014.69	1,019.52	1,019.86	1,020.10
3	1,021.27	1,019.44	1,018.73	1,019.56	1,020.98	1,018.36	1,015.60	1,008.94	1,017.98	1,019.52	1,019.69	1,019.90
4	1,021.23	1,019.40	1,018.94	1,019.56	1,019.69	1,018.36	1,017.10	1,010.56	1,019.48	1,019.60	1,020.56	1,019.56
5	1,020.86	1,019.68	1,019.36	1,019.90	1,019.15	1,018.40	1,010.90	1,009.94	1,014.31	1,020.44	1,019.90	1,019.52
6	1,020.73	1,020.31	1,018.86	1,019.94	1,019.31	1,019.77	1,011.36	1,012.31	1,016.44	1,020.06	1,019.73	1,019.65
7	1,020.65	1,020.31	1,018.40	1,020.73	1,018.90	1,018.98	1,014.90	1,011.15	1,019.81	1,020.31	1,019.69	1,019.77
8	1,020.77	1,019.27	1,018.31	1,021.15	1,019.36	1,019.69	1,015.19	1,013.10	1,019.52	1,020.27	1,020.69	1,019.77
9	1,020.19	1,019.27	1,018.23	1,020.98	1,018.94	1,018.27	1,017.02	1,019.56	1,019.73	1,019.98	1,020.48	1,019.69
10	1,019.86	1,019.27	1,017.98	1,020.44	1,019.15	1,018.10	1,015.73	1,019.19	1,020.23	1,019.73	1,020.23	1,020.31
11	1,019.77	1,019.27	1,018.23	1,020.36	1,018.94	1,018.27	1,015.86	1,014.10	1,019.69	1,019.60	1,020.40	1,020.52
12	1,019.60	1,019.73	1,019.02	1,020.44	1,018.81	1,017.90	1,008.52	1,000.56	1,019.52	1,020.31	1,020.31	1,021.44
13	1,019.60	1,019.02	1,017.77	1,020.60	1,018.69	1,019.52	1,001.36	1,010.52	1,019.65	1,019.36	1,020.98	1,023.02
14	1,019.69	1,019.23	1,017.44	1,021.02	1,018.65	1,019.60	1,003.77	1,005.06	1,019.65	1,019.40	1,020.56	1,022.19
15	1,019.77	1,019.10	1,018.36	1,021.94	1,018.06	1,019.06	1,005.73	998.73	1,019.23	1,020.02	1,020.23	1,021.15
16	1,019.48	1,018.81	1,018.15	1,021.90	1,017.86	1,018.36	1,003.90	1,004.23	1,019.56	1,019.40	1,019.98	1,020.60
17	1,019.56	1,018.81	1,018.15	1,021.15	1,017.73	1,018.81	1,009.40	1,009.27	1,019.60	1,018.40	1,019.65	1,020.98
18	1,019.44	1,019.27	1,018.48	1,020.44	1,017.60	1,018.77	1,018.15	1,016.90	1,019.15	1,018.44	1,020.23	1,020.65
19	1,019.44	1,019.73	1,019.48	1,020.44	1,017.69	1,018.06	1,007.98	1,014.36	1,017.81	1,020.31	1,020.98	1,020.19
20	1,019.48	1,019.44	1,017.86	1,020.56	1,018.27	1,017.73	1,007.15	1,011.35	1,014.73	1,020.10	1,020.69	1,019.73
21	1,019.48	1,018.94	1,017.73	1,020.31	1,018.31	1,017.56	998.06	1,012.56	1,014.10	1,020.10	1,020.40	1,019.69
22	1,019.73	1,018.68	1,017.94	1,020.31	1,017.81	1,017.44	1,004.06	1,008.52	1,012.31	1,020.27	1,020.02	1,019.73
23	1,019.23	1,019.15	1,018.69	1,019.77	1,018.48	1,017.19	1,009.36	1,005.86	1,019.31	1,021.02	1,019.65	1,021.77
24	1,019.10	1,018.94	1,019.19	1,019.44	1,018.98	1,017.44	1,005.98	1,006.15	1,019.40	1,020.98	1,019.81	1,021.81
25	1,018.98	1,018.98	1,019.31	1,020.44	1,019.15	1,017.65	998.32	1,005.94	1,014.48	1,020.31	1,019.73	1,020.90
26	1,018.86	1,019.36	1,019.56	1,020.94	1,018.86	1,013.56	997.27	1,009.86	1,012.77	1,019.94	1,019.86	1,020.31
27	1,019.06	1,018.94	1,019.60	1,021.31	1,018.44	1,017.36	997.65	1,015.56	1,013.31	1,019.77	1,019.77	1,020.27
28	1,019.52	1,018.81	1,020.60	1,021.36	1,018.23	1,017.69	996.56	1,011.86	1,017.48	1,019.73	1,019.65	1,019.98
29	1,019.98	....	1,020.81	1,021.65	1,017.81	1,017.48	1,007.56	1,020.06	1,014.14	1,019.86	1,020.56	1,019.69
30	1,019.73	....	1,020.69	1,021.56	1,017.94	1,014.19	1,006.44	1,019.48	1,019.36	1,019.56	1,020.56	1,019.77
31	1,019.65	....	1,020.40	....	1,017.10	....	1,005.15	1,017.15	....	1,019.56	....	1,019.94

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River at Herkimer, N Y

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	381.23	380.98	379.68	381.43	379.23	379.43	377.88	378.13	379.18	378.78	379.23	381.68
2.....	382.08	380.33	379.83	380.73	381.28	379.43	377.93	378.03	379.18	378.78	379.13	380.88
3.....	385.93	379.78	378.83	380.18	381.43	378.48	378.03	377.98	379.58	378.93	379.03	379.53
4.....	385.93	379.48	378.63	379.88	379.83	378.23	377.78	377.93	379.23	379.33	379.18	379.33
5.....	385.83	379.68	378.48	381.68	379.18	379.48	*b*	378.03	378.98	380.78	379.48	379.13
6.....	385.38	379.58	378.28	383.78	378.93	381.38	*b*	377.98	379.08	380.23	379.43	381.58
7.....	384.28	379.08	378.23	386.13	378.53	381.08	377.53	378.53	380.18	380.28	379.93	379.98
8.....	383.68	379.08	378.13	386.53	378.43	379.73	377.58	378.43	382.28	380.83	380.23	380.38
9.....	383.48	379.13	378.23	385.78	378.18	378.93	377.53	378.33	383.43	380.03	380.33	381.03
10.....	383.23	379.98	378.33	384.78	377.98	378.33	377.53	378.63	383.83	379.38	380.38	381.43
11.....	382.83	378.73	378.23	384.08	377.83	378.23	377.73	378.58	380.68	379.13	380.03	381.93
12.....	383.68	378.68	378.93	383.53	*b*	378.38	377.78	378.23	379.78	379.38	380.03	381.98
13.....	383.78	378.53	379.88	383.38	*b*	380.58	377.73	378.13	379.38	378.83	380.43	382.33
14.....	383.58	378.53	381.28	283.48	377.53	381.38	377.73	378.13	379.28	378.73	381.23	382.83
15.....	383.33	378.43	382.08	384.13	377.63	379.88	377.63	378.18	379.13	378.63	381.78	383.28
16.....	382.68	378.33	381.83	385.23	377.53	379.08	377.53	378.58	379.13	378.58	382.23	383.43
17.....	382.08	378.28	383.43	384.48	377.53	378.88	377.78	378.63	379.13	378.53	382.23	383.43
18.....	381.43	378.78	382.23	382.93	377.53	378.43	378.83	378.78	378.78	378.63	382.58	383.48
19.....	381.13	379.38	380.33	381.28	378.08	378.23	378.78	378.93	378.68	379.03	382.83	383.33
20.....	381.08	380.98	379.28	381.13	377.98	378.13	378.43	378.73	378.53	379.48	382.68	383.33
21.....	381.23	380.13	379.58	380.83	377.83	378.03	378.08	378.73	378.48	379.53	382.28	383.43
22.....	381.48	379.33	380.28	380.53	377.53	378.03	377.93	378.73	378.63	379.33	382.02	383.73
23.....	381.28	378.98	382.13	380.28	377.58	378.13	377.93	378.63	378.68	379.23	381.63	383.88
24.....	380.83	378.83	381.28	379.98	379.13	377.98	377.98	378.73	378.63	379.38	381.18	383.73
25.....	380.48	378.73	380.38	379.73	380.73	377.83	377.98	378.73	378.43	379.78	380.83	383.68
26.....	380.23	378.83	380.48	379.73	379.98	377.73	378.13	378.83	378.43	379.48	380.53	383.53
27.....	380.78	380.58	384.03	379.58	379.23	377.93	378.13	378.78	378.48	379.18	380.98	382.93
28.....	384.08	380.28	386.43	379.53	378.33	379.48	378.03	378.88	378.43	379.13	381.23	382.38
29.....	383.93	......	386.73	379.53	377.88	379.28	377.93	380.53	378.53	379.08	381.68	381.53
30.....	383.33	......	385.33	379.43	*b*	378.43	378.03	......	378.83	378.93	382.28	380.78
31.....	381.33	......	383.83	......	*b*	......	378.13	379.38	......	378.13	......	379.73

b Water-surface below bottom of gage, 377.43.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River at Genesee St. Bridge, Utica, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	398.94	398.19	396.64	398.94	396.69	395.14	395.84	395.54	395.44	395.74	396.09	398.24
2......	400.44	398.14	396.59	397.74	396.94	395.14	395.64	395.44	395.44	395.94	396.14	397.84
3......	401.89	398.14	396.54	397.19	397.04	395.14	395.54	395.44	395.64	395.84	396.04	397.34
4......	402.54	398.19	396.44	397.19	396.94	395.14	395.54	395.44	395.74	395.74	395.94	397.14
5......	400.69	398.24	396.44	398.54	396.94	395.29	395.54	395.44	395.69	395.64	395.94	397.09
6......	398.94	398.14	396.44	401.44	396.84	396.19	395.54	395.54	395.64	395.64	395.94	397.04
7......	397.94	398.14	396.44	402.94	396.69	396.69	395.44	395.54	395.74	395.84	396.14	396.99
8......	397.54	397.99	396.44	404.69	396.64	396.59	395.44	395.44	396.19	395.84	396.59	396.94
9......	397.44	397.59	396.44	404.49	396.64	396.24	395.44	395.39	396.99	395.74	396.74	397.09
10......	397.49	397.24	396.64	404.24	396.64	395.79	395.44	395.29	397.14	395.64	397.09	398.69
11......	397.69	396.99	396.74	404.14	396.54	395.49	395.34	395.14	396.99	395.89	397.34	399.84
12......	398.09	396.89	396.89	403.89	396.54	395.84	395.34	395.04	396.94	395.89	397.54	402.49
13......	397.89	396.74	396.99	403.69	396.54	396.34	395.34	394.94	396.74	395.74	397.74	404.39
14......	397.79	396.69	397.14	403.44	396.54	396.44	395.29	394.89	396.49	395.64	398.69	404.39
15......	397.74	396.64	397.14	403.59	396.54	396.44	395.24	394.84	396.44	395.64	399.29	403.39
16......	397.64	396.64	396.99	403.49	396.44	396.34	395.24	394.84	396.39	395.64	399.74	402.39
17......	397.64	396.84	396.94	403.29	396.39	396.29	395.49	394.89	396.19	395.64	400.09	401.69
18......	397.64	397.59	396.84	402.74	396.34	396.24	395.54	394.89	396.09	395.79	401.04	401.34
19......	397.54	397.84	396.84	402.04	396.39	396.14	395.54	394.84	395.95	396.04	401.64	401.04
20......	397.54	397.69	396.99	401.44	396.39	396.14	395.49	394.94	395.79	395.89	401.64	400.49
21......	397.54	397.49	397.04	400.49	396.34	396.14	395.44	394.84	395.69	395.74	401.54	399.99
22......	397.79	397.19	397.39	398.54	396.34	396.04	395.39	394.84	395.79	395.64	401.44	399.39
23......	397.84	396.87	397.74	397.84	396.24	396.04	395.34	394.79	395.69	395.94	401.29	401.59
24......	397.79	396.69	397.74	397.34	396.84	395.94	395.34	394.79	395.54	396.14	401.14	403.14
25......	397.74	396.49	397.64	397.14	397.19	396.09	395.34	395.09	395.54	396.09	400.89	401.69
26......	397.74	396.44	397.89	397.04	397.19	396.49	395.39	395.14	395.69	395.84	400.44	399.64
27......	397.84	396.64	401.24	396.94	396.94	396.79	395.54	395.09	395.84	395.89	400.19	399.89
28......	397.34	396.64	405.59	396.94	396.59	397.09	395.54	395.04	395.69	395.89	399.79	400.74
39......	399.44	......	403.79	396.84	396.24	396.94	395.44	395.49	395.74	395.79	399.24	400.04
30......	398.69	......	402.54	396.79	395.74	396.39	395.49	395.74	395.74	395.69	398.79	397.69
31......	398.49	......	401.44	......	395.[illegible]4	......	395.54	395.54	......	395.79	......	396.74

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Nine-Mile Creek near Stittville, N. Y

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	486.47	484.52	484.37	485.37	484.02	484.02	483.97	483.82	483.92	484.02	485.02	485.42
2......	486.57	484.42	484.32	484.72	484.12	484.07	483.92	483.82	483.92	484.02	484.37	485.22
3......	486.62	484.32	484.32	484.32	484.17	484.12	483.92	483.82	483.92	484.17	484.32	484.92
4......	486.42	484.27	484.22	484.67	484.17	484.17	483.92	483.92	483.92	484.22	484.42	484.37
5......	485.37	484.27	484.22	485.32	484.02	484.17	483.82	483.92	483.92	484.27	484.42	484.27
6......	484.97	484.27	484.22	485.82	484.02	485.67	484.12	483.92	484.37	484.92	484.47	484.22
7......	484.82	484.37	484.22	485.82	483.92	485.02	483.82	483.92	484.37	484.37	485.47	484.22
8......	484.52	484.37	484.52	485.77	484.02	484.07	483.82	483.92	484.42	484.42	485.27	484.32
9......	484.42	484.42	484.62	485.42	484.02	484.02	483.92	483.92	485.62	484.32	484.52	485.02
10......	484.52	484.32	484.62	485.32	484.02	484.02	483.82	483.92	485.52	484.17	484.57	485.17
11......	484.52	484.32	484.82	483.92	484.02	484.17	483.92	483.92	484.97	484.02	484.77	485.27
12......	484.62	484.22	484.87	484.02	484.02	485.02	483.92	483.92	484.57	484.07	485.07	485.42
13......	484.62	484.17	484.97	485.17	484.02	485.02	483.92	483.92	484.37	484.37	484.92	486.27
14......	485.02	484.12	485.17	486.52	484.02	484.02	483.92	483.92	484.32	484.37	484.82	485.77
15......	484.92	484.12	485.37	484.92	483.92	484.07	483.92	483.92	484.42	484.07	484.82	485.22
16......	484.22	484.22	484.47	483.97	483.92	484.17	484.02	483.92	484.42	484.07	484.92	486.32
17......	484.12	484.32	484.32	483.92	483.92	484.07	484.17	483.92	484.32	484.42	484.92	485.87
18......	484.02	484.32	484.32	484.02	483.92	484.02	484.27	483.82	484.22	484.27	484.92	485.27
19......	484.02	484.37	484.42	484.02	483.92	483.92	483.92	483.82	484.17	485.42	484.92	485.07
20......	484.02	484.37	484.47	483.92	483.92	483.92	483.92	483.82	484.17	485.32	485.12	484.92
21......	484.47	484.42	484.27	484.17	483.97	483.92	483.87	483.82	484.07	485.22	484.82	484.42
22......	484.52	484.97	484.22	484.27	483.92	483.97	483.82	483.82	484.02	484.07	484.87	484.47
23......	484.62	485.07	484.32	484.27	483.97	484.07	483.82	483.82	483.92	484.32	484.97	484.42
24......	484.62	485.07	484.32	484.22	484.02	484.17	483.92	483.82	483.97	484.22	485.07	484.47
25......	484.62	485.07	484.37	484.32	484.02	484.22	483.92	483.92	483.92	484.22	485.17	484.47
26......	484.82	485.12	484.57	484.27	484.02	484.37	483.87	483.92	483.92	484.12	485.17	484.47
27......	485.07	485.12	485.07	484.22	484.02	484.47	483.82	483.92	484.02	484.17	484.97	484.37
28......	485.02	485.12	486.07	484.12	484.02	484.87	483.87	484.02	484.07	484.07	485.07	484.27
29......	485.12	......	485.32	484.02	483.92	484.22	483.82	484.07	484.12	484.02	485.47	484.22
30......	485.07	......	485.32	484.02	483.92	484.02	483.82	484.02	484.17	483.97	485.52	484.07
31......	484.47	......	485.42	......	484.12	......	483.82	484.02	......	484.17	......	484.02

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River below State Dam at Rome, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	428.66	429.06	428.86	429.66	428.96	429.66	428.66	427.96	428.06	428.46	429.26	428.96
2......	429.86	429.06	428.86	429.46	432.26	429.06	428.86	427.96	428.06	428.96	428.86	428.96
3......	432.26	429.06	428.86	429.46	429.66	428.46	428.76	427.96	428.36	428.66	428.86	428.96
4......	431.06	429.16	428.86	429.26	429.26	428.56	427.96	427.96	428.16	428.36	428.76	429.06
5......	430.46	428.96	428.96	429.06	429.16	429.26	428.06	427.96	428.06	429.86	428.86	429.06
6......	430.86	428.86	428.86	431.46	429.06	430.46	427.96	427.96	430.46	429.06	428.86	429.06
7......	430.76	428.86	428.86	435.06	429.06	429.66	428.46	427.86	429.06	430.16	429.46	428.96
8......	430.66	428.86	428.86	433.46	429.06	429.46	428.26	427.96	429.26	429.06	429.46	428.96
9......	430.66	428.86	428.86	431.46	428.76	429.46	428.46	427.96	428.86	428.86	429.26	429.06
10......	430.26	428.66	428.86	430.46	428.76	428.76	427.96	427.96	428.96	428.86	429.36	430.06
11......	430.46	428.66	428.86	430.46	428.06	428.76	428.06	427.86	428.76	428.66	429.26	430.76
12......	430.46	428.56	428.96	431.46	428.06	429.26	428.46	427.86	428.86	428.56	428.86	432.46
13......	430.46	428.56	428.86	431.86	428.06	429.76	428.06	427.86	428.86	428.46	430.26	433.26
14......	429.36	428.56	428.86	433.06	427.96	430.06	428.06	427.86	428.66	428.36	429.16	431.96
15......	429.46	428.66	428.96	433.06	427.86	429.26	428.26	427.86	428.46	428.36	429.06	431.06
16......	429.26	428.66	428.86	430.86	427.86	429.26	428.06	427.96	428.86	428.26	429.16	431.16
17......	428.96	428.66	428.86	430.46	427.86	429.06	429.46	427.86	428.46	428.26	429.16	432.46
18......	429.46	428.86	428.86	429.96	427.86	428.96	429.26	427.86	428.06	428.36	429.26	430.46
19......	429.26	428.76	428.86	430.26	427.86	428.96	428.86	427.86	427.96	429.86	429.26	429.76
20......	429.26	428.76	428.86	*a*	427.86	428.96	428.26	427.86	427.96	429.06	429.06	429.16
21......	429.26	428.76	428.76	*a*	427.86	428.66	428.36	427.86	428.06	429.06	429.06	428.96
22......	429.26	428.86	428.76	*a*	427.86	428.66	428.26	427.86	428.26	428.96	429.06	429.66
23......	429.26	428.76	428.86	*a*	427.86	428.66	428.06	427.86	428.26	431.66	428.96	432.96
24......	428.86	428.76	428.86	429.46	428.86	428.66	428.26	427.86	428.06	429.46	428.96	431.06
25......	429.26	428.76	428.86	429.46	428.66	428.96	428.66	427.86	428.06	429.16	428.96	429.66
26......	429.46	428.86	429.06	429.46	428.46	428.86	428.46	427.86	428.16	428.86	428.86	429.26
27......	429.66	428.86	431.76	429.46	428.16	428.96	428.26	427.86	428.06	428.86	428.86	429.56
28......	430.66	428.96	435.46	429.26	427.96	429.46	428.36	428.46	428.16	428.86	428.86	429.46
29......	430.46	......	431.06	428.46	427.96	428.96	428.46	429.46	428.36	428.66	428.86	429.16
30......	429.56	......	430.06	428.86	427.96	428.96	428.06	428.86	428.66	428.66	428.96	429.06
31......	429.46	......	429.86	......	427.96	......	428.06	428.46	......	428.56	......	428.86

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River above Dam at Rome N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	431.90	432.00	431.30	432.50	432.00	432.40	431.72	429.52	430.82	431.52	432.32	431.93
2......	432.80	432.00	431.40	432.40	434.20	432.00	431.82	429.42	430.72	432.02	431.83	431.93
3......	435.00	432.00	431.40	432.40	432.40	431.60	431.72	429.32	431.32	431.72	431.83	431.93
4......	433.60	432.20	431.40	432.30	432.10	431.50	430.82	429.32	431.32	431.52	431.73	432.03
5......	433.30	432.00	431.40	432.30	431.80	432.00	430.92	429.32	430.52	432.72	431.73	432.03
6......	432.50	432.00	431.40	433.40	431.70	433.00	430.42	429.22	433.12	432.12	431.73	432.03
7......	432.20	432.00	431.30	437.60	431.80	432.50	431.42	429.12	432.12	432.92	432.33	431.93
8......	432.00	431.90	431.30	434.60	431.80	432.20	431.42	429.12	432.32	432.12	432.33	431.93
9......	432.20	431.90	431.30	434.00	431.60	432.20	431.52	430.52	431.92	431.92	432.13	432.03
10......	432.20	431.90	431.30	433.40	431.60	431.80	431.12	429.92	432.02	431.92	432.23	433.03
11......	432.20	431.90	431.30	433.40	431.40	431.80	431.12	430.12	431.92	431.82	432.23	433.73
12......	432.20	431.80	431.60	434.00	430.40	432.20	431.42	429.12	431.72	431.72	431.83	435.43
13......	432.20	431.80	431.50	434.20	429.20	432.50	431.12	429.12	431.72	431.62	433.13	436.23
14......	432.10	431.70	431.50	434.60	428.00	432.80	431.12	429.12	431.72	431.52	432.03	434.93
15......	432.00	431.70	431.60	434.80	428.00	432.40	431.32	429.12	431.52	431.52	431.93	433.93
16......	432.00	431.60	431.50	433.60	428.00	432.40	431.12	429.12	431.92	431.52	431.93	434.13
17......	432.00	431.50	431.50	433.00	428.30	432.30	432.52	429.22	431.72	431.42	431.93	435.43
18......	432.30	431.40	431.50	432.60	428.50	432.20	432.22	429.12	431.12	431.62	432.13	433.43
19......	432.30	431.60	431.60	432.80	428.60	432.20	431.72	429.22	430.92	432.72	432.13	432.73
20......	432.30	431.60	431.60	432.90	428.60	432.20	431.52	429.12	430.92	432.12	431.93	432.13
21......	432.40	431.50	431.60	433.00	430.40	431.90	431.62	429.12	430.92	432.12	431.93	431.93
22......	432.40	431.40	431.50	433.10	430.40	431.90	431.52	429.12	431.32	432.02	431.93	432.53
23......	432.30	431.40	431.60	432.80	430.00	431.90	430.92	429.12	431.32	434.92	431.83	435.93
24......	432.00	431.40	431.60	432.40	431.80	431.90	431.52	429.12	431.32	432.52	431.83	433.93
25......	432.20	431.40	431.60	432.40	432.00	432.00	431.62	429.22	431.32	432.22	431.83	432.63
26......	432.30	431.40	431.60	432.40	431.60	431.90	431.52	429.32	431.32	431.92	431.83	432.23
27......	432.40	431.40	434.40	432.40	428.90	432.00	431.32	429.32	431.22	431.92	431.83	432.53
28......	433.10	431.30	438.00	432.30	429.00	432.40	431.52	431.42	431.42	431.92	431.83	432.33
29......	433.40	......	433.40	431.80	429.00	432.00	431.62	432.32	431.52	431.82	431.83	432.03
30......	432.70	......	432.60	432.00	428.60	432.00	430.12	431.92	431.72	431.82	431.93	431.93
31......	432.50	......	432.60	......	428.60	......	429.92	431.72	......	431.72	......	431.83

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River at Floyd Ave. Bridge' Rome, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	449.29	447.06	446.81	447.16	446.79	447.31	446.59	446.41	446.46	446.61	447.36	447.26
2......	449.71	446.81	446.76	447.09	448.51	446.79	446.61	446.41	446.41	447.01	446.96	447.06
3......	448.61	446.61	446.61	447.21	447.13	446.63	446.61	446.41	446.51	446.86	446.91	446.96
4......	447.86	447.06	446.61	447.09	446.89	446.49	446.61	446.41	446.46	447.26	446.91	446.71
5......	447.79	447.11	446.51	447.46	446.76	448.06	446.61	446.41	446.41	447.51	446.93	446.79
6......	447.66	447.11	446.51	449.46	446.69	448.16	446.61	446.41	448.76	447.03	446.93	446.76
7......	447.76	447.16	446.46	451.21	446.61	447.11	446.59	446.41	447.13	448.01	448.01	446.66
8......	447.51	447.21	446.43	449.63	446.61	446.99	446.51	446.43	446.91	447.16	447.86	446.69
9......	447.51	447.03	446.46	448.93	446.56	446.86	446.51	446.73	447.09	446.96	447.31	447.46
10......	447.31	446.91	446.61	448.59	446.53	446.71	446.51	446.43	446.91	446.86	447.41	448.69
11......	447.31	446.76	446.43	449.19	446.51	446.69	446.51	446.43	446.73	446.81	447.36	448.61
12......	447.39	446.76	446.51	449.16	446.51	447.06	446.59	446.41	447.03	446.73	447.16	449.86
13......	447.39	446.66	446.53	449.51	446.46	447.56	446.56	446.49	446.76	446.71	448.23	449.83
14......	447.29	446.61	446.81	450.59	446.41	447.56	446.51	446.41	446.61	446.63	447.31	447.81
15......	447.16	446.81	447.01	450.16	446.43	447.01	446.51	446.43	446.61	446.73	447.21	447.59
16......	447.01	446.81	446.66	448.71	446.61	446.83	446.51	446.41	447.01	446.71	447.19	447.89
17......	446.96	446.86	446.61	448.43	446.61	446.71	447.41	446.41	446.66	446.61	447.43	448.66
18......	446.91	447.01	446.69	448.03	446.63	446.66	447.01	446.43	446.61	447.76	448.86	447.46
19......	446.76	447.31	446.83	448.46	446.69	446.61	446.56	446.43	446.56	447.79	448.01	447.09
20......	446.76	446.96	446.73	448.21	446.71	446.61	446.46	446.41	446.53	447.21	447.63	446.86
21......	446.86	446.89	446.61	447.69	446.71	446.56	446.51	446.41	446.51	447.16	447.39	446.79
22......	446.86	446.79	446.66	447.99	446.66	446.71	446.46	446.41	446.69	447.13	447.19	446.83
23......	446.76	446.73	447.01	447.31	446.61	446.73	446.46	446.41	446.63	448.69	446.89	449.59
24......	446.73	446.73	446.86	447.19	447.33	446.63	446.71	446.41	446.51	447.31	447.09	447.96
25......	446.66	446.71	446.73	447.21	446.89	446.61	446.59	446.43	446.51	447.06	447.03	447.26
26......	446.66	446.71	446.71	447.13	446.66	446.61	446.46	446.46	446.53	447.01	447.01	447.06
27......	446.73	446.81	449.06	447.01	446.56	446.71	446.46	446.51	446.61	446.91	446.99	447.61
28......	447.46	446.91	450.46	446.91	446.41	447.06	446.46	446.66	446.63	446.93	447.06	448.16
29......	447.36	......	448.53	446.83	446.49	446.66	446.46	447.31	446.81	446.89	449.01	447.21
30......	447.11	......	447.91	446.76	446.51	446.61	446.56	446.63	446.81	446.86	447.61	447.03
31......	447.26	......	447.61	......	446.51	......	446.49	446.53	......	447.01	......	447.06

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River below Dam at Ridge Mills, N. Y.

DAY.	Sept.	Oct.	Nov.	Dec.
1911.				
1	459.10	459.30	459.90	459.70
2	459.10	459.70	459.60	459.70
3	459.20	459.30	459.50	459.50
4	459.20	459.30	459.40	459.50
5	459.00	460.10	459.50	459.40
6	460.20	459.70	459.50	459.40
7	459.80	460.80	460.60	459.40
8	459.60	459.70	460.60	459.30
9	459.70	459.60	459.90	459.40
10	459.60	459.40	459.90	460.90
11	459.30	459.30	459.60	461.10
12	459.20	459.30	459.60	462.10
13	459.40	459.20	461.20	462.00
14	459.20	459.20	459.90	460.40
15	459.20	459.20	459.70	460.00
16	459.70	459.30	459.70	460.40
17	459.30	459.20	459.70	461.10
18	459.20	459.50	460.00	460.10
19	459.20	460.40	460.80	459.70
20	459.00	459.70	460.30	459.50
21	459.00	459.50	459.90	459.40
22	459.40	459.70	459.80	459.40
23	459.30	461.40	459.50	461.50
24	459.20	459.90	459.70	460.60
25	459.20	459.70	459.70	459.80
26	459.20	459.50	459.50	459.80
27	459.20	459.50	459.50	459.60
28	459.30	459.50	459.60	460.50
29	459.20	459.40	461.70	459.80
30	459.50	459.50	461.00	459.90
31	......	459.40	......	459.70

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River above Dam at Ridge Mills, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	466.60	466.20	466.10	466.60	466.20	467.00	466.00	465.80	466.02	466.12	466.82	466.72
2	466.80	466.20	466.10	466.50	468.00	466.30	466.00	465.80	465.92	466.42	466.52	466.52
3	467.50	466.20	466.00	466.30	466.70	466.10	466.00	465.80	466.02	466.22	466.42	466.42
4	466.70	466.40	466.00	466.30	466.40	466.10	466.00	465.80	466.02	466.22	466.32	466.32
5	466.40	466.50	466.00	466.50	466.30	466.20	466.00	465.80	465.82	466.82	466.42	466.22
6	466.30	466.30	466.00	467.80	466.20	466.40	465.90	465.80	466.82	466.52	466.42	466.22
7	466.30	466.40	465.90	469.50	466.10	466.60	465.90	465.80	466.62	467.32	467.22	466.22
8	466.20	466.60	465.90	468.20	466.00	466.40	465.90	466.20	466.42	466.62	467.22	466.22
9	466.20	466.60	465.90	467.70	466.00	466.20	465.90	465.90	466.52	466.42	466.72	466.32
10	466.10	466.60	466.00	467.50	466.00	466.10	465.90	465.90	466.42	466.32	466.52	467.42
11	466.10	466.60	465.90	467.70	466.00	466.20	465.90	466.00	466.22	466.22	466.52	467.62
12	466.20	466.60	466.00	467.80	466.00	466.40	466.00	465.80	466.12	466.22	466.52	468.52
13	466.40	466.60	466.00	468.00	466.00	467.00	466.00	465.80	466.22	466.12	467.72	468.42
14	466.40	466.60	466.10	468.40	466.00	467.00	465.90	465.80	466.12	466.12	466.72	467.12
15	466.40	466.60	466.40	468.50	466.00	466.40	465.90	465.80	466.12	466.12	466.62	466.82
16	466.20	466.60	466.20	467.60	466.10	466.20	466.00	465.80	466.52	466.22	466.62	467.02
17	466.10	466.60	466.20	467.20	466.10	466.10	466.60	465.80	466.12	466.12	466.52	468.12
18	466.10	466.80	466.20	467.00	466.10	466.10	466.50	465.80	466.02	466.42	466.82	466.92
19	466.10	466.80	466.10	467.20	466.10	466.10	466.50	465.80	466.02	467.02	467.32	466.52
20	466.20	466.70	466.20	467.30	466.20	466.00	466.20	465.80	465.92	466.62	468.92	466.32
21	466.30	466.70	466.10	467.00	466.10	466.00	466.00	465.80	465.92	466.42	466.72	466.32
22	466.30	466.70	466.20	466.70	466.10	466.00	465.90	465.80	466.12	466.52	466.62	466.32
23	466.30	466.60	466.60	466.80	466.10	466.00	465.90	465.80	466.12	467.92	466.22	468.02
24	466.30	466.60	466.50	466.50	466.70	466.00	466.00	465.80	466.02	466.72	466.52	467.32
25	466.40	466.60	466.10	466.50	466.40	466.00	466.00	465.80	466.02	466.52	466.52	466.72
26	466.40	466.60	466.70	466.40	466.10	466.00	466.00	465.90	466.02	466.42	466.42	466.92
27	466.30	466.30	467.60	466.30	466.10	466.10	466.00	465.90	466.02	466.32	466.42	466.52
28	466.80	466.20	469.20	466.20	465.90	466.60	466.00	466.40	466.12	466.32	466.42	467.02
29	466.50	......	467.70	466.20	465.80	466.60	465.90	466.90	466.02	466.32	468.12	466.52
30	466.40	......	467.20	466.20	465.90	466.30	465.90	466.10	466.32	466.32	467.02	467.22
31	466.20	......	466.90	......	466.00	......	465.80	466.00	......	466.22	......	466.42

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River near Lock 7, below Delta, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	481.50	481.15	481.10	481.95	481.35	481.85	480.70	480.70	*a*	*a*	479.20	485.55
2.....	481.55	480.90	480.95	481.85	481.85	481.50	480.90	480.60	*a*	*a*	479.45	485.35
3.....	481.70	480.85	480.90	481.50	481.80	481.10	480.75	480.60	*a*	*a*	479.70	485.55
4.....	481.75	480.95	480.85	481.20	481.30	480.90	480.75	480.40	*a*	*a*	479.65	485.50
5.....	481.45	480.80	480.75	481.75	481.10	481.05	480.80	480.60	*a*	*a*	480.00	485.15
6.....	481.25	480.65	480.85	484.25	481.00	482.25	480.60	480.70	*a*	*a*	480.10	485.15
7.....	481.10	480.70	480.75	486.35	480.90	481.40	480.50	480.65	*a*	*a*	480.05	485.45
8.....	481.05	480.65	480.70	484.00	480.85	481.25	480.40	480.60	*a*	*a*	480.00	486.75
9.....	481.05	480.75	480.75	483.40	480.60	481.10	480.00	481.10	*a*	*a*	480.25	487.10
10.....	480.85	480.65	480.65	483.35	480.65	481.00	480.10	480.85	*a*	*a*	479.55	487.60
11.....	481.00	480.85	480.60	484.10	480.65	481.35	480.10	480.70	*a*	*a*	479.30	487.75
12.....	481.30	480.75	480.55	484.15	480.65	481.50	479.90	480.65	*a*	*a*	479.25	488.15
13.....	481.35	480.70	480.65	483.65	480.65	481.60	480.00	480.60	*a*	*a*	479.00	488.10
14.....	481.35	480.65	480.90	485.30	480.45	481.65	480.30	480.60	*a*	*a*	479.25	485.80
15.....	481.40	480.60	481.25	484.25	480.30	481.35	480.45	480.65	*a*	*a*	479.30	485.55
16.....	481.15	480.60	480.85	483.90	481.00	481.15	480.35	480.50	*a*	*a*	480.00	485.55
17.....	480.95	480.70	481.00	482.30	480.85	481.05	481.80	480.45	*a*	*a*	478.60	486.85
18.....	480.85	481.45	480.95	482.05	480.80	480.95	481.50	480.65	*a*	*a*	477.95	485.15
19.....	480.90	481.35	480.95	482.30	480.95	480.85	481.30	480.65	*a*	*a*	478.10	485.65
20.....	480.85	481.20	480.85	482.25	481.10	480.90	481.10	479.00	*a*	*a*	479.30	485.95
21.....	480.95	481.40	480.85	482.00	481.00	480.80	480.95	479.95	*a*	*a*	479.45	485.45
22.....	480.95	480.85	480.95	481.85	480.85	480.80	480.75	479.00	*a*	*a*	480.10	485.00
23.....	480.85	480.75	481.55	481.80	481.35	480.75	480.75	479.00	*a*	*a*	480.30	487.85
24.....	480.75	480.85	481.45	481.55	481.65	480.90	481.25	479.85	*a*	*a*	480.30	487.65
25.....	480.80	480.65	481.20	481.45	481.45	480.85	480.85	479.00	*a*	*a*	480.45	486.45
26.....	480.85	480.75	481.25	481.55	480.85	481.75	480.80	479.00	*a*	*a*	480.40	486.05
27.....	480.95	481.15	483.95	481.45	480.75	481.70	480.90	479.00	*a*	*a*	480.10	485.85
28.....	482.10	481.05	484.90	481.35	480.65	481.45	480.95	479.00	*a*	*a*	479.05	485.75
29.....	481.65	......	483.90	481.20	480.60	480.95	480.75	479.00	*a*	*a*	480.05	485.55
30.....	481.55	......	482.35	481.10	480.75	480.80	480.75	479.00	*a*	*a*	480.20	485.15
31.....	481.45	......	482.00	......	480.80	......	480.90	479.00	......	*a*	......	485.05

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Mohawk River above Dam at Delta, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	......	509.25	509.35	509.55	509.55	509.65	509.35	509.05	509.15	......	509.65	509.65
2.....	509.55	509.25	509.25	......	510.05	509.35	......	509.05	509.05	509.65	509.45	509.55
3.....	510.05	509.15	509.25	509.35	509.55	509.25	509.35	508.95	......	509.25	509.35	......
4.....	509.65	509.15	509.15	509.45	509.45	......	509.25	508.95	508.95	510.55	509.45	509.45
5.....	509.55	......	......	510.35	509.35	510.75	509.25	508.95	508.85	509.75	......	509.35
6.....	509.55	509.15	509.25	510.15	509.25	510.05	509.25	......	510.55	509.55	509.45	509.35
7.....	509.45	509.15	509.15	510.65	......	509.75	509.15	508.95	509.55	509.35	510.35	509.25
8.....	......	509.15	509.05	510.35	509.25	509.55	509.15	508.95	509.45	......	510.05	509.45
9.....	509.35	509.15	509.15	......	509.25	509.35	......	509.05	509.35	509.45	509.75	509.95
10.....	509.35	509.15	509.15	510.05	509.15	509.25	509.15	508.75	......	509.45	509.95	......
11.....	509.35	509.15	509.05	510.25	509.15	......	508.95	508.55	509.25	509.35	509.55	509.65
12.....	509.55	......	......	510.25	509.15	509.55	509.05	508.55	509.05	509.35	......	509.85
13.....	509.45	509.15	509.05	510.45	509.05	509.65	509.15	......	509.15	509.25	510.55	510.05
14.....	509.55	509.15	509.25	510.65	......	509.95	509.05	508.85	509.25	509.25	509.95	509.75
15.....	......	509.05	509.35	510.75	509.25	509.55	508.95	508.95	509.55	......	509.65	509.85
16.....	509.25	509.05	509.35	......	509.25	509.35	......	508.85	509.35	509.25	509.55	510.05
17.....	509.25	509.15	509.25	509.95	509.15	509.35	509.65	508.85	......	509.25	509.45	*a*
18.....	509.25	509.45	509.35	510.05	509.25	......	509.45	508.95	509.15	510.55	510.45	*a*
19.....	509.15	......	......	509.95	509.15	509.35	509.15	508.95	509.15	509.85	......	*a*
20.....	509.15	509.35	509.35	509.75	509.15	509.35	509.05	......	509.05	509.65	510.05	*a*
21.....	509.15	509.25	509.25	509.65	......	509.25	509.05	508.65	509.05	509.55	509.75	*a*
22.....	......	509.15	509.25	509.65	509.25	509.35	509.05	508.65	509.35	......	509.55	*a*
23.....	509.15	509.15	509.55	......	509.25	509.15	......	508.55	509.25	510.15	509.45	*a*
24.....	509.15	509.15	509.35	509.55	509.55	509.25	509.55	508.65	......	509.65	509.55	*a*
25.....	509.15	509.15	509.35	509.95	509.35	......	509.35	508.75	509.15	509.55	509.45	*a*
26.....	509.15	......	......	509.75	509.35	509.25	509.15	508.95	509.15	509.35	......	*a*
27.....	509.35	509.45	511.55	509.55	509.35	509.65	509.15	......	509.15	509.45	509.45	*a*
28.....	509.85	509.35	510.65	509.45	......	509.55	509.05	509.55	509.35	509.45	509.45	*a*
29.....	......	......	510.05	509.35	509.25	509.35	509.05	509.35	509.75	......	510.35	*a*
30.....	509.55	......	509.85	......	509.25	509.25	......	509.25	509.35	509.35	509.95	*a*
31.....	509.35	......	509.65	......	509.25	......	509.05	509.15	......	509.85	......	*a*

a No record.

MOHAWK RIVER NEAR DUNSBACH FERRY, N. Y.

The gaging record is kept at the dam of the West Troy Water Company, one-fifth mile above Dunsbach Ferry bridge, 9 miles from the mouth of the river. The dam is in two sections, situated on opposite sides of a Hudson river shale island. The left wing at the upper end of the island has a crest length of 380 feet. The right wing, 500 feet downstream at the foot of the island, has a crest 280 feet long.

The record was established, March 12, 1898, for the primary purpose of checking a system of levels for the United States Board of Engineers on Deep Waterways, by D. J. Howell, C. E., who has furnished the earlier portion of the record. No record was kept from April 1, 1899, to August 1, 1900. During the period 1900–1907, the record was maintained under the direction of the United States Geological Survey in coöperation with this Department. During 1911 the record was maintained by this Department.

In the pumping station adjoining the dam there is one turbine of the old American type, 66 inches in diameter, also a new 54-inch Victor turbine, which was installed during 1902. The discharge is calculated from the recorded daily run of the water-wheels and working head. The turbines drive pumps, taking water from the river for water-supply purposes, the capacity of the pumps being 3,500,000 gallons per day, equivalent to a continuous flow of 5.4 second-feet.

The dam is of masonry, with a flat granite crest 5.5 feet wide. It was rebuilt in 1903, and a new profile obtained. The crest gage is attached to the timber cribbing 50 feet above the lower section of the dam, and is in three sections. Gage readings are taken twice daily at intervals of about 12 hours, by Robert Wilson. The mean of the two daily readings is used in computing the flow. The discharge over the main dam has been calculated by means of the weir formula, using coëfficients derived from the United States Geological Survey experiments.

During high water the current of the stream through the cross-section of the channel leading to the lower dam has a velocity of several feet per second. The head due to this velocity has been

added to the observed head as a correction for velocity of approach to the lower dam. The upper dam is situated 450 feet upstream from the crest gage.

The discharge record at this station for 1911 is not available.

MOHAWK RIVER AT TRIBES HILL, N. Y.

This gaging station, which is located at the suspension bridge over the Mohawk river between Fort Hunter and Tribes Hill, was established April 3, 1904, by E. A. Lamb of this Department in coöperation with the U. S. Weather Bureau. The gage was formerly a vertical board attached to the downstream end of the north abutment of the suspension bridge. A standard box-and-chain gage is now used.

The elevation of bench-mark, marked "U. S. Weather Bureau Tablet No. 13," set in second course of the northeast anchorage of this bridge, is 295.021. Observations of the stage of the stream were taken twice each day during 1911.

Current-meter measurements are taken from the downstream side of the suspension bridge, which is 535.6 feet long between abutments. The channel of the river is straight for some distance each way from the bridge, and the cross-section directly under the bridge and below the bridge is quite uniform. About 300 feet above the bridge rapids are formed during low water, the river being shallow and having a rough and stony bed.

This gaging station is located about 1,000 feet below the junction of the Mohawk river and Schoharie creek, and the record here will show the combined discharge of these streams.

Beginning in 1907 the conditions at this station have been modified by construction work for the Barge canal, in progress near by. The calculated discharge for these years is approximate only.

Current-meter Discharge Measurements of Mohawk River at Tribes Hill, N. Y.

DATE.	Hydrographer.	Gage Reading. Beginning.	Gage Reading. Ending.	Gage Reading. Mean.	Meter No.	Lateral interval.	Submergence depth.	Total area.	Total width	Computed discharge.	Velocity correction factor.	Corrected discharge.
1911.						*Feet.*		*Sq. ft.*	*Feet.*	*Sec.-ft.*		*Sec.-ft.*
April 10	Barrett & Robbins.	8.70	8.53	8.62	214	10	0.6	4,295	512	21,857	.969	21,180
April 15	Barrett & Robbins.	9.80	9.90	9.85	214	10	0.6	5,149	512	34,711	.969	33,635

Mean Daily Discharge, Second-feet, of Mohawk River at Tribes Hill, N. Y.

DAY.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.									
1	12,100	8,650	2,712	3,125	1,120	2,850	*2,850	5,425	9,600
2	*9,825	20,100	6,100	*2,575	1,120	2,438	4,150	6,275	9,825
3	7,600	19,450	5,250	2,300	1,120	*2,025	4,950	5,600	*8,650
4	7,000	12,375	*4,000	2,300	1,120	2,300	5,250	5,250	7,400
5	8,650	9,825	3,700	2,025	1,040	2,575	7,400	*5,250	6,462
6	35,150	8,025	12,950	1,775	*960	2,575	7,800	5,425	5,600
7	39,300	*7,000	12,100	1,520	960	2,850	7,800	5,925	4,950
8	32,600	6,462	9,100	1,520	1,120	4,600	*7,000	7,600	4,600
9	*29,150	6,275	7,400	*1,520	1,120	7,400	7,000	10,600	4,600
10	22,650	6,100	5,762	1,520	1,300	*9,600	5,925	10,850	*5,762
11	21,900	5,250	*4,950	1,520	1,410	9,100	4,950	10,600	7,400
12	20,800	4,950	8,025	1,520	1,520	7,400	4,300	*11,100	14,700
13	20,450	4,775	14,100	1,520	*1,520	4,775	3,560	10,850	19,100
14	21,900	*3,560	18,100	1,520	1,300	3,700	3,125	9,600	19,775
15	31,600	3,125	13,525	1,410	1,120	3,125	*3,125	8,650	19,775
16	*29,150	3,125	10,600	*1,300	1,120	3,700	2,712	9,100	18,100
17	24,125	3,125	8,250	1,120	1,120	*3,700	2,575	10,850	*18,100
18	18,100	2,575	*7,200	1,120	1,120	3,700	4,000	13,525	15,000
19	14,700	2,575	5,925	1,120	1,120	3,420	8,450	*14,700	9,825
20	13,800	2,575	5,250	1,300	*1,120	2,712	13,800	15,000	7,200
21	13,525	*3,700	4,300	1,775	1,120	2,300	10,600	13,525	6,275
22	12,950	3,420	3,700	*1,775	1,120	2,300	*12,700	12,100	9,600
23	*13,250	3,125	3,560	*1,300	1,120	2,300	17,500	10,600	23,375
24	11,600	4,950	3,125	1,120	1,120	*2,300	17,150	9,100	*20,800
25	10,600	7,400	*2,988	1,120	1,120	2,300	14,700	8,250	18,100
26	10,850	6,825	2,850	1,120	1,120	2,300	10,600	*7,000	17,500
27	13,800	5,600	2,850	1,120	*1,120	2,300	7,000	7,800	14,400
28	12,950	*4,150	4,600	1,120	1,120	2,162	5,762	8,450	12,375
29	13,525	3,700	4,950	1,120	1,775	2,162	*5,600	9,350	10,325
30	*13,250	3,125	4,000	*1,120	3,420	2,575	4,950	9,600	8,250
31	....	2,575	....	1,120	3,272	....	4,450	....	*7,000
Mean	18,228	6,080	6,731	1,530	1,319	3,585	7,133	9,265	11,756

* Sunday.

Monthly Discharge of Mohawk River at Tribes Hill, N. Y.
[Drainage area, 3,113 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage. area.
1911.					
April	39,300	7,000	18,228	5.86	6.54
May	20,100	2,575	6,080	1.95	2.25
June	18,100	2,712	6,731	2.16	2.41
July	3,125	1,120	1,530	0.491	0.566
August	3,420	960	1,319	0.424	0.489
September	9,600	2,025	3,585	1.15	1.28
October	17,500	2,575	7,133	2.29	2.64
November	15,000	5,250	9,265	2.98	3.32
December	23,375	4,600	11,756	3.78	4.36

NOTE.—Record for January, February and March is defective, due to ice conditions.

MOHAWK RIVER AT FULTONVILLE BRIDGE, FONDA, N. Y.

This gaging station was established April 29, 1906, by R. H. Merrill, for this Department. A box-and-chain, reading decimally from zero to 12 feet, is located on the downstream guard-rail of the middle span of the bridge. The stream channel is straight

and the river uniform for about one-half mile above and below the bridge. The river becomes ice covered in winter, but the conditions are generally good for current-meter measurements. The bridge comprises three spans and is subdivided to five-foot intervals on the downstream side, the initial point being at the face of the left-hand abutment.

Mean Daily Discharge, Second-feet, of Mohawk River at Fonda, N. Y.

DAY.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.									
1	13,200	9,840	1,480	1,562	726	1,890	*2,617	6,390	8,170
2	*10,720	14,480	4,025	*1,328	638	1,726	2,534	5,350	6,170
3	8,436	13,660	3,208	1,252	638	*1,562	2,368	3,932	*5,150
4	7,410	8,572	*2,368	1,252	638	1,404	3,208	3,932	4,405
5	7,170	6,170	2,952	1,176	550	1,328	3,384	*3,932	3,839
6	16,300	4,680	10,120	902	*550	1,644	5,850	3,932	3,472
7	25,810	*3,472	10,120	902	682	3,472	5,850	4,310	3,384
8	29,000	3,208	6,280	968	726	4,590	*7,050	4,950	3,208
9	*26,380	3,472	4,310	*968	726	6,170	6,060	5,250	3,472
10	23,530	3,560	3,208	902	726	*9,556	4,860	8,436	*5,950
11	22,170	3,208	*2,534	836	726	6,940	3,653	6,280	8,844
12	16,900	3,036	2,368	836	836	3,560	3,120	*6,280	9,700
13	13,820	2,368	6,280	836	*836	2,700	2,784	7,170	10,720
14	15,560	*1,726	8,708	682	836	2,700	1,252	6,830	13,820
15	19,880	1,562	6,720	638	726	2,784	*1,480	6,610	13,660
16	*22,980	1,480	4,860	*726	638	2,368	1,644	5,450	15,380
17	17,760	1,176	3,932	836	638	*2,368	1,176	4,590	*14,140
18	13,200	968	*3,208	638	638	2,206	2,285	6,830	12,252
19	10,260	968	2,784	1,328	726	1,562	5,850	*11,632	11,920
20	9,556	1,100	2,451	1,404	*726	1,404	8,844	11,632	8,572
21	9,556	*1,562	1,562	1,034	726	1,404	7,170	11,488	6,390
22	9,412	1,328	1,726	1,100	638	1,252	*6,170	7,910	5,150
23	*8,300	1,252	1,562	*1,100	638	1,100	11,344	5,650	15,200
24	7,170	2,534	1,562	1,034	550	*1,404	13,660	5,550	*17,980
25	7,910	5,250	*1,562	1,034	594	1,404	8,300	5,850	16,300
26	8,844	4,310	1,562	836	638	1,404	6,390	*5,550	10,720
27	9,840	3,472	1,562	836	*638	1,176	4,405	4,950	9,980
28	10,560	*1,726	3,120	726	682	902	3,839	4,950	6,940
29	10,400	1,562	3,036	726	1,328	968	*3,472	7,530	6,170
30	*9,840	1,252	2,048	*726	1,404	1,252	2,952	8,170	7,780
31	....	1,404	....	638	1,969	....	2,952	....	*9,840
Mean	14,062	3,689	3,707	960	766	2,473	4,727	6,377	8,990

Monthly Discharge of Mohawk River at Fonda, N. Y.
[Drainage area, 2,156 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
April	29,000	7,170	14,062	6.52	7.27
May	14,480	968	3,689	1.71	1.97
June	10,120	1,480	3,707	1.72	1.92
July	1,562	638	960	0.445	0.513
August	1,969	550	766	0.355	0.409
September	9,556	902	2,473	1.15	1.28
October	133,660	1,176	4,727	2.19	2.52
November	11,632	3,932	6,377	2.96	3.30
December	17,980	3,208	8,990	4.17	4.81

NOTE.— Record for January, February and March is defective, due to ice conditions.

MOHAWK RIVER AT FORT PLAIN, N. Y.

A gage was established on the highway bridge crossing the Mohawk river at Fort Plain, December 30, 1905, by C. A. Poole, for this Department. A box-and-chain gage is attached to the bridge guard-rail on the downstream side, 50 feet from the right-hand abutment. The elevation of water-surface, when the gage reads zero, is 290.47. The standard chain length is 29.30. The bridge is subdivided to five-foot sections for current-meter measurements. The initial point is the face of the left-hand abutment on the downstream side of the bridge.

Current-meter Discharge Measurements of Mohawk River at Fort Plain, N. Y.

DATE.	Hydrographer.	Gage Reading. Beginning.	Gage Reading. Ending.	Gage Reading. Mean.	Meter No.	Lateral interval.	Submergence depth.	Total area.	Computed discharge.	Velocity correction factor.	Corrected discharge.
1911.						Feet.		Sq. ft.	Sec.-ft.		Sec.-ft.
April 11	Barrett & Robbins.	7.23	7.00	7.12	214	10	0.6	2,799	13,840	1.00	13,840
April 14	Barrett & Robbins.	7.48	7.48	7.48	214	10	0.6	2,870	15,747	1.00	15,747

Mean Daily Discharge, Second-feet, of Mohawk River at Fort Plain, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	*4,325	9,200	6,635	11,550	11,950	2,440	1,438	a	1,105	*1,312	6,757	8,942
2	7,250	8,388	5,327	*8,250	16,000	5,440	*1,153	a	690	5,213	6,392	7,625
3	19,150	7,875	4,433	6,757	14,900	3,600	885	a	*720	3,800	4,542	*5,780
4	16,900	8,250	3,900	5,327	9,200	*2,440	690	a	960	4,000	4,762	5,100
5	14,475	*8,125	*3,600	4,988	7,000	3,020	630	a	1,057	8,250	*4,542	3,700
6	13,000	7,625	3,213	24,840	5,780	12,600	469	*a	1,375	6,392	4,542	3,503
7	10,600	6,878	2,935	21,270	*5,440	8,800	469	a	4,650	7,875	4,988	3,503
8	*9,050	5,902	2,765	23,940	2,542	6,392	469	a	6,148	*7,500	6,757	3,700
9	7,750	5,667	2,935	*23,030	4,762	4,650	*469	a	8,800	6,148	8,125	4,433
10	7,125	5,440	3,407	16,000	5,100	3,407	469	720	*9,200	4,875	7,375	*8,000
11	6,635	5,213	3,213	14,600	4,000	*2,600	469	1,153	6,635	4,108	6,635	9,850
12	6,513	*4,762	*3,600	14,350	3,407	2,765	660	a	3,310	3,407	*6,878	11,400
13	7,875	4,762	3,800	14,475	2,680	8,000	660	*a	3,213	2,680	8,525	16,350
14	8,388	4,762	7,250	16,000	*2,280	9,200	506	a	3,600	2,128	8,942	18,750
15	*7,375	4,542	11,400	23,030	2,280	7,000	469	a	2,935	*1,982	7,000	14,350
16	7,125	4,108	10,100	*23,030	1,773	5,327	*469	a	2,360	2,128	5,902	12,600
17	7,125	3,900	6,270	19,550	1,375	4,762	469	a	*2,680	1,637	5,440	*13,425
18	6,635	4,108	6,148	13,300	1,202	*4,000	524	a	2,200	2,935	7,250	12,075
19	6,025	*6,757	*5,327	11,150	720	3,407	1,438	a	1,153	7,000	*11,950	10,100
20	5,440	7,375	4,217	10,600	1,773	2,680	1,105	*a	1,250	8,000	11,550	7,375
21	5,213	6,270	4,433	11,150	*1,982	2,055	604	a	1,105	6,757	10,350	4,650
22	*4,988	5,100	6,148	10,600	1,773	1,773	469	a	780	*6,270	8,525	5,100
23	4,988	4,650	9,475	*10,600	1,438	1,568	*469	a	1,375	13,000	7,375	16,000
24	4,217	4,325	8,125	8,388	3,800	1,375	469	a	*1,438	11,025	6,148	*15,700
25	3,700	4,108	6,878	8,800	6,513	*1,202	469	a	1,202	8,942	5,513	12,875
26	3,310	*4,650	*6,878	11,700	4,988	1,153	469	a	1,105	6,148	*6,148	11,150
27	3,310	5,902	18,375	12,075	3,700	1,312	469	*a	1,008	5,100	5,553	10,100
28	12,450	7,875	b	12,450	*2,520	3,117	469	a	810	4,108	6,270	9,350
29	*12,750	......	b	12,750	1,842	2,850	469	255	960	*4,000	9,475	7,500
30	11,150	......	27,570	*12,450	1,250	1,982	*469	1,008	1,105	2,765	10,350	5,902
31	9,725	......	17,675	......	1,375	......	469	1,637	......	4,433	......	*6,025
Mean	8,212	5,947	7,105	13,900	4,430	4,031	619	......	2,498	5,172	7,185	9,191

a No record. *b* Beyond limits of rating table. * Sunday.

Monthly Discharge of Mohawk River at Fort Plain, N. Y.
[Drainage area, 1,842 square miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	19,150	3,310	8,212	4.46	5.13
February	9,200	3,900	5,947	3.23	3.36
March	*27,570	2,765	7,105	3.86	4.44
April	24,840	4,988	13,900	7.55	8.46
May	16,000	720	4,430	2.40	2.76
June	12,600	1,153	4,031	2.19	2.45
July	1,438	469	619	0.336	0.386
August	....	....	....	....	....
September	9,200	690	2,498	1.36	1.52
October	13,000	1,312	5,172	2.81	3.23
November	11,950	4,542	7,185	3.90	4.37
December	18,750	3,503	9,191	4.99	5.74

* Actual maximum beyond limits of rating table.

MOHAWK RIVER AT LITTLE FALLS, N. Y.

A gaging station was established at the lower (Gilbert's) dam at Little Falls, N. Y., for the United States Board of Engineers on Deep Waterways in 1898. It was maintained by the U. S. Geological Survey in coöperation with this Department from 1900 to June, 1907, inclusive, when it was taken over by this Department. The dam is of masonry, having the form of a circular arc, and furnishes power for the Astoronga Knitting Mill and the mill of the Little Falls Paper Company. Records of the crest gage and run of the water-wheels at the Astoronga mill were taken by Edward Hagerty during 1911. At the paper mill a record has been kept, beginning June 1, 1907, by C. T. Barrett.

There are three dams at Little Falls. The upper one is a State dam, diverting water for the supply of the Erie canal; the lower two are used for water-power development. The gage record kept at the lower dam shows the amount of water flowing downstream from Little Falls, but does not include the diversion at the State dam above the gaging station, and hence does not represent the total yield from the tributary drainage area of about 1,306 square miles.

Mean Daily Discharge, Second-feet, of Mohawk River at Little Falls, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	*2,647	2,727	2,076	5,480	6,902	1,968	1,118	963	1,088	*1,290	3,573	5,042
2	4,001	1,853	1,977	*3,540	9,984	3,001	*905	737	1,180	1,814	3,302	3,652
3	6,749	1,571	1,680	3,435	8,938	1,953	710	633	*925	2,03	2,515	*2,912
4	6,147	1,415	1,427	3,042	5,050	*1,440	789	629	925	1,98	2,227	2,247
5	5,548	*1,560	*1,309	3,494	3,473	3,180	710	413	1,104	4,436	*1,893	1,973
6	4,248	1,528	1,458	8,779	2,803	6,504	710	*122	1,466	3,538	2,752	2,065
7	3,263	1,279	1,292	13,131	*2,467	4,854	662	715	2,502	3,96	2,512	2,084
8	*2,402	1,318	1,331	13,236	3,413	3,375	564	594	3,356	*3,94	4,267	2,181
9	2,638	1,408	1,255	*11,27	2,366	2,342	*695	911	4,872	3,071	4,858	2,805
10	2,192	1,292	1,292	9,476	2,910	1,906	627	779	*4,906	2,361	3,572	*......
11	1,997	1,307	1,315	8,45	2,373	*1,440	774	563	3,458	2,098	3,634	5,936
12	2,520	*1,029	*1,522	8,073	2,433	1,745	887	617	2,3[illegible]1	1,772	*3,270	6,155
13	2,814	1,319	2,177	8,196	1,786	4,357	740	*372	2,086	1,631	5,414	11,108
14	2,707	1,291	3,514	9,521	*1,334	4,805	627	467	2,004	1,326	4,994	10,387
15	*2,402	1,253	4,578	11,392	1,654	3,789	617	50	1,735	*1,367	3,617	8,386
16	2,196	1,183	3,708	*12,43	1,309	2,783	*656	490	1,603	1,575	3,148	7,185
17	1,834	1,373	2,458	9,89	1,13	2,415	80	68	*1,539	1,132	2,796	*7,755
18	1,471	1,710	2,398	7,347	1,167	*2,158	1,467	586	1,510	1,441	4,513	7,011
19	1,341	*2,236	*1,723	5,567	1,196	2,005	1,318	590	1,250	3,717	*7,005	5,622
20	1,385	2,622	1,993	5,56	1,442	1,563	1,047	*513	1,218	3,896	6,883	3,565
21	1,540	2,07	2,303	5,48	*1,279	1,305	976	580	959	3,056	5,591	2,920
22	*1,449	1,761	2,511	5,36	1,477	1,197	724	677	1,178	*2,737	4,359	2,805
23	1,478	1,534	4,462	*4,50	1,271	1,257	*653	669	1,115	6,503	3,615	9,648
24	1,519	1,348	3,558	4,237	2,992	1,189	709	476	*905	6,319	3,513	*10,004
25	1,389	1,234	2,879	4,446	3,743	*894	84	477	1,166	4,244	3,974	7,755
26	1,375	*1,36	*3,013	5,947	2,771	1,261	84	52	1,120	2,872	*3,322	6,077
27	1,508	2,126	8,352	6,385	2,585	1,153	848	*715	1,120	2,280	3,121	5,416
28	3,844	2,498	14,048	6,742	*1,180	2,372	740	622	1,086	2,203	3,059	5,328
29	*4,584	......	12,537	7,451	1,236	1,921	740	1,896	1,198	*2,082	5,845	3,292
30	5,474	......	9,410	*6,70	1,003	1,296	*607	2,301	1,346	1,933	6,193	2,634
31	4,303	......	7,52	......	1,036	......	651	1,305	......	2,291	......	*2,230
Mean	2,861	1,615	3,584	7,289	2,733	2,381	799	714	1,741	2,740	3,978	5,038

* Sunday.

Monthly Discharge of Mohawk River at Little Falls, N. Y.
[Drainage area, 1,306 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	6,749	1,341	2,861	2.19	2.52
February	2,727	1,029	1,615	1.24	1.29
March	14,048	1,255	3,584	2.74	3.16
April	13,236	3,042	7,289	5.58	6.23
May	9,984	1,003	2,733	2.09	2.41
June	6,504	894	2,381	1.82	2.03
July	1,467	564	799	0.612	0.706
August	2,301	122	714	0.546	0.630
September	4,906	905	1,741	1.33	1.48
October	6,503	1,132	2,740	2.10	2.42
November	7,005	1,893	3,978	3.05	3.40
December	11,108	1,973	5,038	3.86	4.44

MOHAWK RIVER NEAR HERKIMER, N. Y.

This gaging station, which is located at the highway bridge over the Mohawk river between Herkimer and Mohawk, was established November 23, 1904, by C. A. Poole for this Department. The gage is a vertical board secured to the left-hand, or north abutment of the bridge. The gage is in two sections reading from zero to 3.4 feet and from 3.4 to 15.0 feet, respectively, and is graduated in feet and tenths.

Preceding the fall of 1908 current-meter measurements were made from the downstream side of the bridge. Later measurements have been made from the upstream side of bridge, which has a single span of 124.3 feet. The river channel is of uniform cross-section and straight for several hundred feet below the bridge. About 200 feet above the bridge there is a slight bend to the south. During extreme high water the river overflows its banks and flows through additional openings in the dike formed by the highway, and it is necessary to measure this additional flow in order to get the total flood discharge at this station.

This gaging station is located about one and one-quarter miles above the junction of the Mohawk river and West Canada creek. The drainage area of West Canada creek, above its junction with the Mohawk river, is 583 square miles and the drainage area of the Mohawk, above the same point, is about 712 square miles.

The stream channel is obstructed by aquatic grass during the summer months, so that there is not a constant relation between gage height and discharge. The channel is also obstructed by ice in winter and the discharge record, which is approximate only, is not available at present.

Current-meter Discharge Measurements of Mohawk River at Herkimer, N. Y.

DATE.	Hydrographer.	Gage Reading.			Meter No.	Lateral interval.	Submergence depth	Total area.	Total width.	Computed discharge.	Velocity correction factor.	Corrected discharge.
		Beginning.	Ending.	Mean.								
1911.						Feet.		Sq. ft.	Feet.	Sec.-ft.		Sec.-ft.
Feb. 7	Clark & Robbins...	1.7	1.7	1.7	360	5	0.6	539	118	539	.957	516
April 12	Barrett & Robbins.	6.1	6.05	6.08	214	5	0.6	1,152	124	5,106	.957	4,886
April 13	Barrett & Robbins.	5.90	5.90	5.90	214	5	0.6	1,057	124	4,429	.957	4,238
June 6	N. B. Robbins.....	4.50	4.52	4.51	462	5	0.6	950	122	3,110	.957	2,976
July 19	R. N. Barrett......	1.20	1.20	1.20	462	5	0.6	542	121	589	.957	564

MOHAWK RIVER AT FLOYD AVENUE, ROME, N. Y.

A box-and-chain gage was erected by E. F. Weeks, of this Department, at Riverside bridge crossing Mohawk river near Rome, July 9, 1907. The gage is attached to the upstream hand-rail near the left-hand end of the bridge. The gage reads from zero to 7.5 feet. The standard chain length is 18.98 feet and the elevation of water-surface, when the gage reads zero, is 445.16. Readings are taken each morning and afternoon by G. G. Williams. A bench-mark located at the junction of the upstream wing wall and left-hand abutment is at elevation 460.80. The channel is straight for some distance upstream and downstream from the bridge. Current-meter measurements are made on the downstream side, the initial point being the face of the right-hand abutment. A crude dam or barrier of boulders has been placed across the stream a few hundred feet downstream for the purpose of raising the water-level to produce an ice pond.

Owing to ice obstruction, it is believed that the record for winter months may be excessive, but the record is otherwise good.

Mean Daily Discharge, Second-feet, of Mohawk River at Floyd Ave., Rome, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	*2,800	498	340	576	340	690	230	150	165	*230	740	650
2	3,330	340	310	*530	1,875	340	*230	150	150	465	432	498
3	1,985	230	230	610	550	242	230	150	*180	370	400	*432
4	1,212	498	230	530	400	*180	230	150	165	650	400	280
5	1,165	*530	*180	835	310	1,410	230	150	150	880	*416	340
6	1,020	530	180	2,995	280	1,510	230	*150	2,155	481	416	310
7	1,118	570	165	5,540	*230	530	230	150	550	1,360	1,360	255
8	*880	610	158	3,232	230	465	180	158	400	*570	1,212	280
9	880	481	165	*2,359	205	370	*180	295	530	432	690	835
10	690	400	230	1,985	192	280	180	158	*400	370	790	*2,100
11	690	310	158	2,680	180	*280	180	158	295	340	740	1,985
12	790	*310	*180	2,620	180	498	230	150	481	295	*570	3,525
13	790	255	192	3,060	165	925	205	*180	310	280	1,585	3,492
14	690	230	340	4,610	*150	925	180	150	230	242	696	1,165
15	*570	340	465	3,950	158	465	180	·158	230	*295	610	970
16	465	340	255	*2,100	230	355	*180	150	465	280	610	1,260
17	432	370	230	1,796	230	280	790	150	*255	230	812	*2,042
18	400	465	280	1,385	242	*255	465	158	230	1,118	2,270	835
19	310	*690	*355	1,822	280	230	205	158	205	1,165	*1,360	530
20	310	432	295	1,560	280	230	165	*150	192	610	995	370
21	370	400	230	1,070	*280	205	180	150	180	570	790	340
22	*370	340	255	1,360	255	280	165	150	280	*550	610	355
23	310	295	465	*690	230	295	*165	150	242	2,100	400	3,200
24	295	295	370	610	715	242	280	150	*180	690	530	*1,310
25	255	280	295	610	400	*230	230	158	180	498	481	650
26	255	*280	*280	550	255	230	165	165	192	465	*465	498
27	295	340	2,502	465	205	280	165	*180	230	400	465	970
28	835	400	4,380	400	*150	498	165	255	242	416	498	1,510
29	*740	......	1,902	355	180	255	165	690	340	*400	2,445	610
30	530	......	1,260	*310	180	230	*205	242	340	370	970	481
31	650	......	970	......	180	......	180	192	......	465	......	*498
Mean	820	395	576	1,706	314	440	226	184	338	567	825	1,051

* Sunday.

Monthly Discharge of Mohawk River at Floyd Ave., Rome, N. Y.
[Drainage area, 158 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	3,330	255	820	5.19	5.97
February	690	230	395	2.50	2.60
March	4,380	158	576	3.64	4.19
April	5,540	310	1,703	10.80	1.21
May	1,875	150	314	1.99	2.29
June	1,510	180	440	2.79	3.12
July	790	165	226	1.43	1.64
August	690	150	184	1.16	1.33
September	2,155	150	338	2.14	2.40
October	2,100	230	567	3.59	4.14
November	2,445	400	825	5.22	5.82
December	3,525	255	1,051	6.65	7.67

SCHOHARIE CREEK DRAINAGE BASIN.

DESCRIPTION OF BASIN.

The source of Schoharie creek is about two miles east of Tannersville, at an elevation of 1,940 feet. The source is within about four miles of the easterly escarpment of the Catskill plateau. The stream valley is broad and the slope moderate throughout the upper regions. A small area, which apparently was formerly tributary to Schoharie creek, has been cut off by erosion and has thus become tributary to Kaaterskill. Nearly the entire drainage basin is irregular and precipitous. It is extensively covered with second-growth forests.

The basin of Schoharie creek is largely overlaid by slaty rocks, into which water percolates only to a slight depth. The valley soil is largely thin plastic clay, formed by disintegration of the native rocks. Passing from the head waters toward the mouth, Schoharie creek crosses successively the Devonian sedimentary rocks, chiefly of the Catskill, Oneonta, Ithaca and Hamilton formations. All of these may be considered fairly impervious and free from fissures. It then crosses belts of Silurian formations, including Helderberg, Salina, Niagara and Medina sandstone and limestone. These rocks are underlaid by impervious Hudson river shales, but are themselves permeable, yielding numerous springs at the lower partings.

The entire drainage basin is shown on the topographic maps of the U. S. Geological Survey, the elevation and area at different points along the stream being as follows:

*Drainage Area of Schoharie Creek.**

LOCATION.	DISTANCE IN MILES.†			Elevation.	FALL IN FEET.		DRAINAGE AREA IN SQUARE MILES.	
	From mouth.	From Prattsville.	Place to place.		Place to place.	Per mile.	Point to point.‡	Total.
Reservoir site........	64.0	0.0	......	1,240	......	....	228.0	228.0
Prattsville gage......	62.5	1.5	1.5	1,160	80	53.3	10.4	238.4
Devasego Falls.......	60.5	3.5	2.0	1,100	60	30.0	8.1	246.5
Gilboa..............	55.5	8.5	5.0	1,000	100	20.0	58.5	305.0
North Blenheim......	48.5	15.5	7.0	800	200	22.3	92.9	397.9
Breakabeen..........	43.0	21.0	5.5	710	90	16.4	23.8	421.7
Middleburg..........	35.0	29.0	8.0	620	90	11.2	105.7	527.4
Schoharie...........	29.5	34.5	5.5	590	30	5.5	26.6	554.0
Mouth of Fox creek..	28.0	36.0	1.5	585	5	3.3	90.5	644.5
Above Cobleskill creek	24.0	40.0	4.0	580	5	1.2	12.8	657.3
Mouth of Cobleskill..	24.0	46.0	0.0	580	0	....	135.9	793.2
Esperance...........	18.0	46.0	6.0	560	20	3.3	63.2	856.4
Burtonville..........	14.5	49.5	3.5	520	40	11.4	14.0	870.4
Mill Point bridge.....	6.0	58.0	8.5	340	180	21.1	30.3	900.7
Mouth (Ft. Hunter)..	0.0	64.0	6.0	280	60	7.5	8.6	909.3

* From U. S. Geological Survey topographic maps. † Measured along general course of stream. ‡ From head.

The results of gagings of this stream at stations formerly maintained may be found in the report of the State Engineer and Surveyor for 1902, supplement, pages 169–180.

SCHOHARIE CREEK AT FORT HUNTER, N. Y.

A gage was erected on Schoharie creek above the State feeder dam at Fort Hunter, November 17, 1904, by C. A. Poole, of this Department. The gage is maintained in coöperation with the U. S. Weather Bureau. The gage is attached to the downstream wing wall of the right-hand abutment of the West Shore R. R. bridge. It is vertical and divided to feet and tenths and is in two sections, the lower section reading from zero to 3.9, the upper section reading from 3.9 to 16 feet. The zero mark is at elevation 280.5. Readings are taken at 8 A. M. and 6 P. M. each day.

Mean Daily Estimated Inflow, Second-feet, from Schoharie Creek into Mohawk River at Fort Hunter, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	*560	b25	b25	a	945	b25	30	b25	b25	b25	560	841
2......	1,518	b25	b25	*a	1,773	b25	*b25	b25	b25	b25	560	744
3......	4,063	b25	b25	a	1,773	b25	b25	b25	*b25	b25	396	*649
4......	7,123	b25	b25	a	1,645	*b25	b25	b25	b25	b25	396	560
5......	2,915	*b25	*b25	a	1,277	b25	b25	b25	b25	89	*254	396
6......	1,645	b25	b25	a	841	b25	b25	*b25	b25	b25	254	396
7......	89	b25	b25	a	*560	190	b25	b25	b25	138	254	254
8......	*b25	b25	b25	a	560	473	b25	b25	b25	*89	254	254
9......	b25	b25	b25	*a	560	945	*b25	b25	57	57	138	254
10......	b25	b25	b25	a	473	396	b25	b25	*320	b25	138	*396
11......	b25	b25	b25	a	320	*560	b25	b25	320	b25	190	396
12......	b25	*b25	*b25	a	254	2,466	b25	b25	254	b25	*473	744
13......	b25	b25	b25	a	190	4,591	b25	*b25	138	b25	945	1,397
14......	b25	b25	b25	a	*138	5,143	b25	b25	89	b25	1,645	744
15......	*254	b25	b25	a	138	3,230	b25	b25	57	*b25	945	560
16......	57	b25	254	*a	138	2,320	*b25	b25	b25	b25	841	1,163
17......	b25	b25	320	a	57	1,773	b25	b25	*b25	b25	560	*2,466
18......	b25	b25	649	1,645	57	*1,163	b25	b25	b25	b25	473	1,645
19......	b25	*b25	*57	1,518	57	1,051	b25	b25	b25	560	*2,179	1,051
20......	b25	b25	560	1,397	89	649	b25	*b25	b25	2,612	1,906	945
21......	b25	b25	396	1,397	*138	560	b25	b25	b25	1,397	1,518	744
22......	*b25	b25	945	1,397	138	473	b25	b25	b25	*1,645	1,397	649
23......	b25	b25	2,320	*1,397	89	396	*b25	b25	b25	3,555	1,163	1,277
24......	b25	b25	1,277	1,277	57	320	b25	b25	*b25	2,612	1,051	*3,072
25......	b25	b25	138	1,163	30	*254	b25	b25	b25	1,397	945	2,179
26......	b25	*b25	*744	1,051	b25	254	b25	b25	b25	473	*744	1,906
27......	b25	b25	4,063	945	b25	190	b25	*b25	b25	396	841	2,040
28......	89	57	4,591	945	*b25	138	b25	b25	b25	396	1,397	2,763
29......	*b25	......	3,891	945	b25	138	b25	b25	b25	*396	1,518	1,518
30......	b25	......	2,179	*945	b25	57	*b25	b25	b25	320	1,051	1,051
31......	b25	......	1,277	......	b25	......	b25	b25	......	396	......	*841
Mean...	608	26	775	1,232	402	929	25	25	60	544	833	1,093

a No record. *b* Estimated leakage; no overflow. * Sunday.

Estimated Monthly Inflow from Schoharie Creek into Mohawk River at Fort Hunter, N. Y.

[Drainage area, 909 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	7,123	b 25	608	0.699	0.771
February	57	b 25	26	0.029	0.030
March	4,591	b 25	775	0.853	0.983
April	1,645	945	1,232	1.36	1.52
May	1,773	b 25	402	0.442	0.510
June	5,143	b 25	929	1.02	1.14
July	30	b 25	25	0.028	0.032
August	b 25	b 25	25	0.028	0.032
September	320	b 25	60	0.066	0.074
October	3,555	b 25	544	0.598	0.689
November	2,179	138	833	0.916	1.02
December	3,072	254	1,093	1.20	1.38

b Estimated leakage; no overflow.

SCHOHARIE CREEK AT MIDDLEBURG, N. Y.

A temporary gaging station was established at Middleburg August 24, 1906, by Robert E. Horton for this Department. The gage consists of an enameled steel scale subdivided to hundredths of a foot, which is attached vertically to a pile forming part of the shore protection on the right-hand bank of the stream, about 300 feet below Middleburg bridge. The zero mark of the gage is 27.6 feet below the top of the iron rod at the upper end of the pile. The stream channel is straight for a considerable distance below and above the gage. The bed is of gravel and cobblestones fairly smooth and permanent. The stream is confined near the right bank during low water and measurements are made by boat or by wading opposite the gage. At ordinary high stages the stream can be measured from the Middleburg bridge. Gage readings are taken each morning and night by Minnie E. Wheeler.

Mean Daily Gage Height, in Feet, of Schoharie Creek at Middleburg, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	4.40	3.12	2.78	2.75	2.78	1.25	1.45	0.90	1.30	1.10	2.45	2.20
2......	6.45	3.38	2.52	2.60	3.00	1.32	1.42	0.90	1.22	1.25	2.22	2.18
3......	11.55	2.88	2.45	2.50	3.00	1.32	1.35	0.90	1.18	1.62	2.08	2.12
4......	5.75	3.75	2.22	2.40	2.75	1.25	1.28	0.85	1.05	1.52	2.05	2.10
5......	6.25	3.88	2.12	4.75	2.60	1.28	1.20	0.85	1.00	1.55	2.00	2.02
6......	7.25	2.75	1.95	6.48	2.48	1.68	1.20	0.85	1.08	1.55	1.98	1.98
7......	7.75	2.00	1.88	5.70	2.30	1.92	1.25	1.18	1.75	1.58	2.02	1.92
8......	7.00	2.38	1.85	4.48	2.20	2.40	1.25	1.02	1.70	2.15	2.28	1.85
9......	6.25	3.00	1.82	3.90	2.15	2.52	1.15	0.95	2.12	1.90	2.12	1.88
10......	5.00	2.60	1.98	3.72	2.15	2.15	1.15	0.90	2.15	1.78	2.05	2.02
11......	5.55	2.50	1.82	3.82	2.08	2.25	1.12	0.85	1.90	1.70	2.00	2.05
12......	6.75	2.50	2.00	3.50	1.90	4.45	1.02	0.80	1.78	1.65	1.95	2.00
13......	6.10	2.38	2.30	3.28	2.00	5.40	1.00	0.80	1.62	1.60	2.82	2.00
14......	6.75	2.25	2.62	3.40	1.98	5.10	0.95	0.80	1.52	1.52	2.45	2.00
15......	6.75	2.00	2.70	4.05	1.88	3.95	0.95	0.80	1.42	1.48	2.35	2.05
16......	6.75	2.25	2.65	3.73	1.80	3.68	1.00	0.75	1.35	1.42	2.32	2.62
17......	5.25	2.75	2.50	3.38	1.75	3.40	1.18	0.80	1.35	1.42	2.25	3.15
18......	3.88	4.62	2.35	3.10	1.70	3.10	1.08	0.80	1.30	1.58	3.25	2.82
19......	3.00	4.42	2.38	2.92	1.70	2.68	1.00	0.82	1.25	4.08	3.30	2.60
20......	3.50	3.38	2.05	3.02	1.85	2.42	0.95	0.85	1.20	3.60	2.85	2.30
21......	3.75	2.88	2.12	3.18	1.82	2.28	0.95	0.80	1.15	2.95	2.70	2.40
22......	4.00	2.50	2.40	3.02	1.65	2.10	0.95	0.80	1.10	3.00	2.50	2.42
23......	3.75	2.55	4.00	2.98	1.60	2.10	0.95	0.75	1.15	3.75	2.30	3.68
24......	3.38	2.75	3.30	3.00	1.55	1.92	0.95	0.75	1.10	3.45	2.48	3.32
25......	3.00	3.00	2.28	2.78	1.60	1.85	0.90	0.75	1.10	2.95	2.52	2.95
26......	3.00	3.10	2.85	2.68	1.60	1.78	0.95	0.82	1.12	2.75	2.32	2.80
27......	3.50	4.32	4.70	2.70	1.58	1.75	0.95	0.92	1.15	2.58	2.25	3.00
28......	6.25	3.42	5.62	2.82	1.48	1.68	0.95	0.92	1.10	2.45	2.32	2.90
29......	5.00	......	3.45	2.88	1.40	1.55	0.90	0.95	1.08	2.30	2.60	2.38
30......	4.62	......	3.40	2.80	1.32	1.50	0.90	1.75	1.05	2.22	2.42	2.50
31......	3.75	......	3.15	......	1.30	......	0.95	1.50	......	2.12	......	2.58

Mean Daily Discharge, Second-feet, of Schoharie Creek at Middleburg, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	*2,520	1,055	757	735	757	65	108	22	74	*42	532	390
2	6,480	1,285	581	*630	940	79	*101	22	60	65	404	379
3	*a*	830	532	565	940	79	84	22	*52	156	334	*356
4	4,900	1,700	404	500	735	*65	70	18	36	127	322	345
5	6,000	*1,845	*356	3,050	630	70	56	18	31	134	*300	311
6	8,700	735	270	6,540	549	172	56	*18	39	134	285	285
7	*b*10,700	300	240	4,800	*445	260	65	52	196	141	311	260
8	*8,000	486	230	2,650	390	500	56	34	180	*368	431	230
9	6,000	940	222	1,890	368	581	*49	26	356	250	356	240
10	3,500	630	285	1,670	368	368	49	22	*368	206	322	*311
11	4,500	565	222	1,775	334	*418	46	18	250	180	300	322
12	7,300	*565	*300	1,400	250	2,600	34	14	206	164	*270	300
13	5,640	486	445	1,193	300	4,200	31	*14	156	148	795	300
14	7,300	418	648	1,308	*285	3,690	26	14	127	127	532	300
15	*7,300	300	700	2,050	240	1,940	26	14	101	*114	472	322
16	7,300	418	665	*1,670	215	1,610	*31	11	84	101	459	648
17	3,950	735	565	1,285	196	1,308	52	14	*84	101	418	*1,078
18	1,845	2,850	472	1,032	180	*1,032	39	14	74	141	1,170	795
19	940	*2,560	*486	870	180	682	31	16	65	2,085	*1,216	630
20	1,400	1,285	322	963	230	516	26	*18	56	1,520	810	645
21	1,700	830	356	1,101	*222	431	26	14	49	890	700	500
22	*2,000	565	500	963	164	345	26	14	42	*940	565	516
23	1,700	598	2,000	*920	148	345	*26	11	49	1,700	445	1,610
24	1,285	735	1,216	940	134	260	26	11	*42	1,354	549	*1,239
25	940	940	431	757	148	*230	22	11	42	890	581	890
26	940	*1,032	*472	682	148	206	26	16	46	735	*459	780
27	1,400	2,430	3,000	700	141	196	26	*24	49	614	418	940
28	6,000	1,331	4,650	795	*114	172	26	24	42	532	459	850
29	*3,500	......	1,354	830	95	134	22	26	39	*445	630	486
30	2,850	......	1,308	*780	79	120	*22	196	36	404	516	565
31	1,700	......	1,078	......	74	......	26	120	......	356	......	*614
Mean	4,138	1,016	809	1,501	323	756	42	28	101	489	512	556

a Discharge above limits of rating curve. *b* Approximate. * Sunday.

Monthly Discharge of Schoharie Creek at Middleburg, N. Y.
[Drainage area, 527 square miles,]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	*a*10,700	940	4,138	7.85	9.05
February	2,850	300	1,016	1.93	2.01
March	4,650	222	809	1.54	1.78
April	6,540	500	1,501	2.85	3.18
May	940	74	323	0.613	0.707
June	4,200	65	756	1.43	1.60
July	108	22	42	0.080	0.092
August	196	11	28	0.053	0.061
September	368	31	101	0.192	0.214
October	2,085	42	489	0.928	1.07
November	1,216	270	512	0.972	1.08
December	1,610	230	556	1.06	1.22

a Actual maximum beyond limits of rating table.

SCHOHARIE CREEK AT PRATTSVILLE, N. Y.

Schoharie creek above Prattsville drains a rugged, mountainous area, almost entirely wooded. The watershed, 238 square miles in extent, lies wholly within Greene county. Rocks of the Catskill formation, chiefly sandstones and conglomerates, lie at or near the surface over most of the area. The basin is surrounded by nearly continuous mountain ranges; and intervening ridges divide the main stream from its principal tributaries — Batavia kill, East kill and West kill.

The gaging station was established November 7, 1902, by Robert E. Horton for the U. S. Geological Survey in coöperation with the New York Water Supply Department, on the highway bridge at Prattsville. It was assumed and continued by the Board of Water Supply of the city of New York on May 7, 1907, at which time a new standard Board of Water Supply chain gage was installed. The old datum was preserved and the present readings conform to those already obtained.

The gage is attached to the floor of the bridge on the upstream side near the left bank. The chain length is 27.05 feet. The elevation of the datum of the gage is 1,130.03 (U. S. G. S. B. M.). The gage datum is referred to a bench-mark — a circle of white paint marked on a boulder at the right end of the downstream side of the bridge, elevation 1,151.00, or 20.97 above the datum of the gage.

Gage readings are made each morning and evening by Miss Edna M. Snyder of Prattsville, N. Y.

The bridge is a single span steel highway bridge, 187.8 feet between abutments, and all the water passes between them at all but the very highest stages.

In high water measurements are made from the bridge, while in low water stages they may be made by wading at a point about 500 feet below the bridge.

Mean Daily Discharge, Second-feet, of Schoharie Creek at Prattsville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	530	231	452	512	721	98	98	21	106	59	285	335
2......	1,600	182	476	440	1,170	90	98	25	98	59	173	325
3......	3,250	158	416	416	621	80	98	24	106	57	85	285
4......	1,725	206	452	551	512	73	85	21	85	57	35	300
5......	990	170	392	3,925	488	90	80	18	98	73	15	275
6......	753	152	325	2,600	428	153	80	18	122	112	61	275
7......	713	142	325	2,138	368	205	73	20	335	205	205	265
8......	649	205	275	2,175	300	1,260	57	21	340	240	374	235
9......	551	170	285	2,200	285	476	40	25	368	217	265	245
10......	452	135	285	1,888	250	300	25	25	340	205	255	235
11......	551	114	380	1,107	217	285	29	24	315	201	235	245
12......	621	128	368	801	225	1,680	25	25	275	177	250	245
13......	537	128	410	1,197	235	2,262	21	18	177	185	676	225
14......	745	100	410	1,125	250	1,680	21	18	145	177	551	250
15......	721	114	410	963	250	1,197	41	18	125	165	452	488
16......	565	122	825	963	235	865	30	16	122	157	410	500
17......	530	100	905	1,400	193	825	30	18	104	138	374	452
18......	500	348	721	621	193	476	25	21	95	250	1,017	428
19......	462	520	705	593	193	392	30	21	95	2,738	721	392
20......	317	360	691	698	201	325	29	18	80	2,200	512	368
21......	276	278	621	649	185	250	25	21	106	1,530	428	350
22......	256	260	649	635	177	217	21	21	90	1,017	401	368
23......	220	128	579	621	165	185	29	21	78	2,388	392	1,053
24......	184	122	350	500	153	177	30	20	73	1,650	434	881
25......	168	128	392	476	145	153	21	20	66	1,242	440	392
26......	194	490	300	452	125	138	21	30	57	990	368	428
27......	264	260	1,888	506	125	138	18	29	59	656	325	452
28......	626	260	1,520	579	118	131	21	35	59	586	325	452
29......	504	......	801	600	112	118	21	193	61	551	488	2,200
30......	426	......	769	565	106	98	29	138	68	392	392	2,725
31......	315	......	551	......	106	......	21	112	......	368	......	3,070
Mean...	649	204	578	1,063	286	481	41	34	142	614	365	600

Monthly Discharge of Schoharie Creek at Prattsville, N. Y.
[Drainage area, 240 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	3,250	168	649	2.70	3.12
February	520	100	204	0.85	0.887
March	1,888	275	578	2.41	2.78
April	3,925	416	1,063	4.43	4.94
May	1,170	106	286	1.19	1.37
June	2,262	73	481	2.00	2.23
July	98	18	41	0.17	0.193
August	193	16	34	0.14	0.161
September	368	57	142	0.59	0.655
October	2,738	57	614	2.56	2.95
November	1,017	15	365	1.52	1.69
December	3,070	225	600	2.50	2.90

EAST CANADA CREEK.

Drainage Areas of East Canada Creek.

(From U. S. G. S. Topographic Maps.)

LIMITS.	Area in Square Miles.			
	Place to place.	Sub total.	Branch total.	Total.
East Canada Creek.				
Above Oregon	40.13	....	....	40.13
Oregon to junction with North creek	10.42	....	....	50.55
North Creek.				
Source to junction with East Canada creek	18.60	....	18.60	69.15
East Canada Creek.				
Junction with North creek to junction with Trammel creek	8.63	....	....	77.78
Trammel Creek.				
Source to junction with East Canada creek	12.04	....	....	89.82
East Canada Creek.				
Junction with Trammel creek to junction with Ayers creek (Stratford)	0.20	....	....	90.02
Ayers Creek.				
Source to junction with East Canada creek	13.63	....	....	103.65
East Canada Creek.				
Junction with Ayers creek (Stratford) to Emmonsburg	8.05	....	....	111.70
Emmonsburg to junction with Big Sprite creek	15.68	....	....	127.38
Big Sprite Creek.				
Source to Stewart landing	40.90	....	....	....
Stewart landing to junction with East Canada creek	7.87	....	48.77	176.15
East Canada Creek.				
Junction with Big Sprite creek to junction with Middle Sprite creek	3.70	....	....	179.85
Middle Sprite Creek.				
Source to junction with East Canada creek	22.65	....	....	202.50
East Canada Creek.				
Junction with Middle Sprite creek to junction with Spruce creek	0.20	....	....	202.70
Spruce Creek.				
Source to dam at Diamond Hill	36.20	36.20	....	....
Dam at Diamond Hill to Salisbury	13.08	49.28	....	....
Salisbury to junction with East Canada creek	1.20	....	50.48	252.98
East Canada Creek.				
Junction with Spruce creek to lower bridge, Dolgeville	0.60	....	....	253.48
Lower bridge, Dolgeville, to High Falls	3.64	....	....	257.22
High Falls to junction with Gillett creek	0.84	....	....	258.06
Gillett Creek.				
Source to junction with East Canada creek	10.92	....	....	268.98
East Canada Creek.				
Junction with Gillett creek to Ingham Mills	8.73	....	....	277.71
Ingham Mills to Beardslee falls	3.60	....	....	281.31
Beardslee falls to mouth	0.30	....	....	281.61

EAST CANADA CREEK AT DOLGEVILLE, N. Y.

A gaging station on this stream was established for the U. S. Board of Engineers on Deep Waterways in 1898. It was maintained by the U. S. Geological Survey in coöperation with this Department from 1900 to June, 1907, inclusive, when it was taken over by this Department.

Observations are taken at High Falls, near Dolgeville, about 7 miles from the outlet of the stream. The gaging station is located at the dam of the Herkimer County Light and Power Company. The dam is of rubble masonry, 19 feet high, and has a flat crest 6 feet wide and 190.25 feet long between abutments. The elevation of the upstream edge of the crest is 1 foot below that of the lip. The impounded water is conducted to the power-house, 500 feet below the dam, through a wrought-iron flume, 10 feet in diameter.

Readings of the depth on the crest are taken from a vertical gage board attached to the bulkhead, 6 feet upstream, twice each day by Godfrey Aman. The mean of the readings is used in computing the discharge. A record is also kept of the run of the water-wheels and the elevation of water in the tail-race. The record since January 1, 1903, has been computed from a discharge curve based on the United States Geological Survey experiments on a full-sized model of the dams, made at Cornell University. The flow through the turbines for this period has also been computed from current-meter measurements, made in the tail-race of the electric power-plant instead of from the manufacturer's rating tables for the water-wheels, as formerly. The turbines are of a special Victor cylinder-gate type. The two main wheels are each 36 inches in diameter, and their speed is controlled by Lombard governors. Beginning November 12, 1907, a pair of 36-inch Rodney Hunt turbines have also been in use.

Spruce creek, the principal tributary of East Canada creek, enters 1 mile above Dolgeville, and drains an area of 50 square miles. Water is diverted from this creek and from Beaver creek, one of the tributaries, at Diamond Hill, and is carried to Little Falls through a cast-iron conduit 9 miles long. The water-supply of Dolgeville is taken from Cole brook, a tributary of East Canada creek. No allowance for diversion of water-supply has been made in computing the run-off for East Canada creek.

Mean Daily Discharge, Second-feet, of East Canada Creek at Dolgeville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	*439	350	315	1,439	2,405	891	180	98	187	*404	601	692
2	665	385	245	*955	3,509	650	*143	75	152	522	559	600
3	1,552	374	242	1,054	2,023	591	97	90	*410	427	513	*805
4	1,787	317	183	793	1,604	*291	95	95	341	627	448	551
5	1,117	*225	*165	601	1,092	582	99	85	190	1,103	*324	233
6	859	223	222	917	525	1,508	101	*73	835	792	393	418
7	601	294	217	2,461	*673	1,094	107	108	721	1,202	413	316
8	*398	284	210	2,409	716	786	200	79	779	*993	846	307
9	488	294	195	*2,178	559	401	*80	206	1,162	254	960	362
10	521	270	205	2,643	487	295	82	122	*1,254	271	820	*325
11	392	255	190	2,418	346	*300	111	133	730	321	814	936
12	433	*386	*148	2,377	355	335	98	294	451	307	*743	1,993
13	438	257	214	2,873	315	1,248	100	*341	416	301	724	3,305
14	363	257	237	4,440	*226	1,528	94	71	272	261	722	2,210
15	*271	248	271	4,573	251	993	85	105	270	*151	675	1,648
16	257	216	243	*4,092	265	740	*90	111	367	274	531	1,122
17	420	287	246	2,781	276	612	95	99	*284	261	159	1,335
18	380	467	228	2,032	237	*196	95	108	283	356	869	*1,337
19	275	*534	*317	1,971	213	373	85	251	237	388	*1,159	1,045
20	284	361	220	1,958	276	369	100	*341	221	610	1,220	808
21	325	385	237	2,308	*298	243	95	66	234	666	1,171	1,163
22	*382	275	250	2,355	319	219	105	71	294	*670	1,041	935
23	304	245	446	*1,890	419	213	*109	71	243	1,892	842	2,530
24	285	253	345	1,745	476	192	113	75	*190	1,617	628	*2,024
25	270	190	460	2,376	950	*199	171	95	176	913	972	1,375
26	257	*372	*1,142	2,894	461	232	170	105	190	667	*308	942
27	282	346	1,906	3,002	648	267	119	*100	205	628	898	1,049
28	378	33	2,002	2,938	*484	230	119	133	170	617	427	664
29	*192	......	1,819	2,597	222	235	105	597	230	*368	776	400
30	369	......	1,632	*2,476	204	180	*70	393	488	384	747	471
31	458	......	1,586	......	208	......	85	240	......	416	......	*549
Mean	498	299	495	2,318	679	533	110	156	399	602	710	1,052

* Sunday.

Monthly Discharge of East Canada Creek at Dolgeville, N. Y.
[Drainage area, 256 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	1,787	192	498	1.95	2.25
February	534	33	299	1.17	1.22
March	2,002	165	495	1.93	2.22
April	4,573	601	2,318	9.05	10.10
May	3,509	204	679	2.65	3.06
June	1,528	180	533	2.08	2.32
July	200	70	110	0.43	0.496
August	597	66	156	0.609	0.702
September	1,254	152	399	1.56	1.75
October	1,892	151	602	2.35	2.70
November	1,220	159	710	2.77	3.10
December	3,305	233	1,052	4.11	4.73

BIG SPRITE CREEK.

BIG SPRITE CREEK AT STEWART LANDING, N. Y.

During the season of 1911 a series of measurements was taken on Big Sprite creek, which enters East Canada creek about two and a half miles below Emmonsburg. The measurements were taken about a half mile below the dam of the Watt Lumber Co. at Stewart Landing at the foot of Canada lake, and cover the lower stages at this point.

Current-meter Discharge Measurements of Fish, or Big Sprite Creek, at Stewart Landing, N. Y.

DATE.	Hydrographer.	Gage Reading.			Meter No.	Lateral interval.	Submergence depth.	Area flowing.	Total area.	Total width.	Computed discharge.	Velocity correction factor.	Corrected discharge.	Canada lake gage	Needles open in dam.
		Beginning.	Ending.	Mean.											
1911.						Feet.		Sq. ft.	Sq. ft.	Feet.	Sec.-ft.		Sec.-ft.		
July 29	R. N. Barrett...	2.10	2.10	2.10	462	2	0.6	41.04	41.04	23	61.57	1.067	65.70	2.25	8*a*
July 29	R. N. Barrett...	1.28	1.28	1.28	462	2	0.6	17.30	22.29	22.7	9.42	1.067	10.05	2.56	0*b*
July 29	R. N. Barrett...	1.28	1.28	1.28	462	2	0.6	18.81	22.29	21.5	9.25	1.067	9.87	2.56	0*b*
July 29	R. N. Barrett...	2.03	2.02	2.025	462	2	0.6	39.43	39.43	23	56.09	1.067	59.85	2.56	0*ac*
July 29	R. N. Barrett...	1.43	1.32	1.375	462	2	0.6	22.28	24.65	23	10.65	1.067	11.36	2.56	C*bc*
July 30	R. N. Barrett...	1.26	1.26	1.26	462	2	0.6	21.84	21.84	21.7	8.92	1.067	9.52	2.60	0*bc*
July 30	R. N. Barrett...	1.32	1.34	1.33	462	2	0.6	20.81	23.42	21.7	11.26	1.067	12.01	2.60	0*bd*
July 30	R. N. Barrett...	2.20	2.30	2.25	462	2	0.6	44.49	44.49	23	93.08	1.067	99.32	2.22	12*a*
July 30	R. N. Barrett...	2.23	2.43	2.33	462	2	0.6	47.48	47.48	23	104.61	1.067	111.62	2.47	14*a*
July 31	R. N. Barrett...	2.23	2.23	2.23	462	2	0.6	44.04	44.04	23	88.37	1.067	94.29	2.22	12*a*
July 31	R. N. Barrett...	1.58	1.62	1.60	462	2	0.6	27.87	29.58	22.8	24.09	1.067	25.70	2.17	3*b*
July 31	R. N. Barrett...	1.62	1.65	1.635	462	2	0.6	29.07	30.50	22.6	24.48	1.067	26.12	2.17	3*b*
July 31	R. N. Barrett...	2.50	2.60	2.55	462	2	0.6	51.40	51.40	23	156.96	1.067	167.48	2.00	All*a*
July 31	R. N. Barrett...	2.60	2.47	2.535	462	2	0.6	51.16	51.16	23	153.03	1.067	163.28	2.00	All*a*

a Saw mill running. *b* Saw mill shut down. *c* Drawing water out of saw mill pond. *d* Lower dam closed.

WEST CANADA CREEK DRAINAGE BASIN.

DESCRIPTION OF BASIN.

West Canada creek rises in West Canada lakes, in southwest-central Hamilton county, and flows southwestward, then southeastward into the Mohawk at Herkimer, N. Y.

The drainage area is shown on the Utica, Little Falls, Remsen, Wilmurt, Old Forge and Canada lakes quadrangles, U. S. Geological Survey topographic map.

There are about fifty small lakes and a few undrained ponds in the watershed of the stream. Most of these are situated near the head waters and above the gaging station, the largest single water-surface being Honnedaga lake, 1.4 square miles in extent. There is also a small amount of controllable storage, in reservoirs formed by three dams. Swamps and marshes are numerous in the region of the head waters, usually adjoining lakes and tributaries and having an extent of one-half square mile or less each.

Much of the region above Twin Rock is timber-covered. There are extensive sand areas in the central and upper drainage basins. The soil of the upper watershed is underlaid by granite gneiss usually at or near the surface, excepting in alluvial valleys. From a point just above Twin Rock bridge and extending downstream beyond Trenton Falls, the underlying geological formation is Trenton limestone.

Compacted snow accumulates in the woodlands in winter, often to a depth of three or four feet, and representing an inch of water for each five or six inches of snow. This melts slowly, feeding the stream in March and April, which months may show a run-off greatly exceeding the precipitation.

*Drainage Area of West Canada Creek.**

DIVISIONS OF AREA.	AREA IN SQUARE MILES.		
	Place to place.	Sub-total.	Total.
West Canada creek lakes, source to outlet of Mud lake	18.05	......	18.05
West Canada creek, foot of lakes to Swanson dam	28.77	......	46.8
West Canada creek, Swanson dam to ½ mile below Metcalf brook	46.82	......	93.
Honnedaga lake, above outlet	5.40	5.40	....
Honnedaga brook, foot of lake to mouth	11.9	17.30	....
Honnedaga lake and brook, total, source to mouth	......	17.30	110.94
West Canada creek, Honnedaga lake outlet to junction with south branch (Nobleboro)	30.46	......	141.40
South branch, West Canada creek, above Mountain House (Remonda)	34.40	34.40	....
South branch, West Canada creek, Mountain House to mouth at Nobleboro	19.25	53.65	....
South branch, West Canada creek, total, source to mouth	......	53.65	....
West Canada creek, total to Nobleboro, including south branch	......	......	195.0
West Canada creek, Nobleboro (junction N. and S. branches) to Wilmurt	2.58	......	....
West Canada creek, total above bridge at Wilmurt	......	......	197.63
Four-mile brook, total, source to mouth	......	26.17	....
West Canada creek, total at Wilmurt, including Four-mile brook	......	......	223.80
West Canada creek, Wilmurt to mouth of Black creek	36.92	......	....
West Canada creek, total to mouth of Black creek	......	......	260.72
Black creek, source through Hall Vly	8.4	8.4	....
Black creek, Hall Vly to Bennett's mill (first bridge above Gray)	16.3	24.7	....
Black creek, Bennett's mill to Gray	4.5	29.2	....
Black creek, Gray to first bridge below Gray	3.0	32.20	....
Mill creek source through Cranberry lake and swamp	11.0	......	....
Mill creek, foot of Cranberry lake to junction N. Branch	6.2	17.20	....
Mill creek, total, source to mouth	......	17.20	....
North branch, Black creek, above contour 1,520 (Bull Hill road)	6.8	......	....
North branch, Black creek, Bull Hill road to junction, Mill creek	4.0	10.8	....
North branch, Black creek, junction, Mill creek, to mouth	0.85	11.65	....
North branch, Black creek, total to junction with Black creek	......	20.85	....
Black creek, total to first bridge below Gray	......	61.05	....
Black creek, first bridge below Gray to Mounts creek	0.17	61.22	....
Mounts creek, above Gray-Wilmurt road (Radley)	13.25	......	....
Mounts creek, Radley to mouth	2.10	......	....
Mounts creek, total, source to mouth	......	15.35	....
Black creek, mouth of Mounts creek to second bridge below Gray	1.55	......	....
Black creek, total to second bridge below Gray	......	78.12	....
Black creek, second bridge below Gray to third bridge	5.65	83.77	....
Black creek, third bridge below Gray to fourth bridge	12.35	96.12	....
Black creek, fourth bridge below Gray to fifth bridge (Pardeville)	4.0	100.12	....
Black creek, Pardeville to Grant	1.95	102.07	....
Black creek, Grant to mouth	1.15	103.22	....
Black creek, total, source to mouth	......	103.22	....
West Canada creek, total to mouth of and including Black creek	......	......	363.94
West Canada creek, mouth of Black creek to Twin Rock bridge	0.5	......	....
West Canada creek, total to Twin Rock bridge	......	......	364.44
West Canada creek, Twin Rock bridge to Hinckley dam	8.5	......	372.94
West Canada creek, Hinckley dam to Prospect	2.0	......	374.94
West Canada creek, Prospect to Trenton Falls	0.9	......	375.84
West Canada creek, Trenton Falls to Steuben creek	6.2	......	382.04
Steuben creek, total, source to mouth	52.3	......	434.34
West Canada creek, Steuben creek to Poland (first bridge below)	35.8	......	470.14
West Canada creek, Poland to Newport	10.0	......	480.14
West Canada creek, Newport to Middleville	47.2	......	527.34
West Canada creek, Middleville to Kast bridge	47.5	......	574.84
West Canada creek, Kast bridge to mouth	8.8	......	583.64
West Canada creek, total, source to mouth	......	......	583.64

*Taken from U. S. Geological Survey topographic maps.

WEST CANADA CREEK AT KAST BRIDGE, NEAR HERKIMER, N. Y.

This gaging station, which is located on West Canada creek about four miles from its junction with the Mohawk river, was established May 15, 1905, by Robert E. Horton, hydrographer, U. S. Geological Survey. The station has since been maintained by this Department.

The gage is of the weight-and-reel type and is placed in a box secured to the north railing of bridge at first panel point from east abutment. The readings are taken by measuring down from a scale in the box to the water-surface by means of an iron weight suspended by graduated tape, which is attached to the reel. The scale in box is one foot long, graduated to tenths and hundredths, with its zero at elevation 464.04. The end of weight used to locate the water-surface is 49.80 feet from zero of tape, which is graduated to feet. The elevation of bottom of weight, when zero of tape is opposite zero of scale, is, therefore, 414.24. The elevation of bench-mark on north end of bridge-seat of right-hand abutment is 458.02.

Observations are taken twice daily by Lloyd Kast.

Discharge measurements are made from the downstream side of the bridge, to which the gage tape is attached. The initial point for soundings is the top face of the left abutment, downstream side. The drainage area at this point is 574 square miles, or 58 per cent greater than at Twin Rock bridge.

Current-meter Discharge Measurements of West Canada Creek at Kast Bridge, near Herkimer, N. Y.

DATE.	Hydrographer.	Gage Reading.			Meter No.	Lateral interval.	Submergence depth.	Total area.	Computed discharge.	Velocity correction factor.	Corrected discharge.
		Beginning.	Ending.	Mean.							
1911.						*Feet.*		*Sq. ft.*	*Sec.-ft.*		*Sec.-ft.*
Feb. 7	Clark & Robbins..	28.53	28.62	28.58	360	5	0.6	298	532	1.00	532
April 12	Barrett & Robbins.	31.02	30.95	30.98	214	5	0.6	825	4,115	1.00	4,115
April 13	Barrett & Robbins.	31.15	31.04	31.10	214	5	0.6	863	4,627	1.00	4,627
June 6	N. B. Robbins....	31.40	31.25	31.32	462	5	0.6	875	4,931	1.00	4,931

Mean Daily Discharge, Second-feet, of West Canada Creek at Kast Bridge, near Herkimer, N. Y

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	1,630	1,120	621	2,234	8,080	1,630	361	182	399	541	1,455	2,188
2	3,206	1,018	577	1,665	13,280	1,700	276	159	295	745	1,385	1,735
3	4,222	774	504	1,490	8,080	1,095	304	208	418	760	1,172	1,350
4	3,678	730	504	1,222	5,455	767	285	227	451	1,525	891	1,095
5	2,510	774	461	1,350	2,694	1,805	285	223	366	2,418	840	826
6	1,805	614	475	5,020	1,595	4,802	290	138	404	1,525	1,222	891
7	1,490	482	451	8,568	1,630	2,372	238	165	1,146	2,510	1,172	993
8	1,299	643	428	6,620	2,878	1,735	257	211	1,560	1,665	2,832	942
9	1,197	694	451	5,310	2,234	1,146	200	394	1,840	1,324	3,147	1,525
10	891	694	428	4,368	2,234	891	314	518	1,945	1,095	2,096	2,510
11	782	570	437	4,440	1,770	760	319	380	1,070	916	2,234	3,206
12	1,044	548	475	4,512	1,560	847	290	347	891	745	2,096	5,685
13	993	577	489	4,948	1,299	2,510	304	208	866	687	3,088	15,840
14	1,095	562	680	8,080	1,070	3,088	285	182	636	606	2,464	14,120
15	1,018	475	968	9,602	942	2,096	208	208	665	737	1,910	5,020
16	804	489	767	7,982	730	1,665	194	252	694	797	1,420	3,737
17	651	518	591	5,600	658	1,455	243	230	680	562	1,222	4,730
18	716	723	591	3,914	606	1,350	456	204	511	752	3,147	3,205
19	665	752	548	3,678	591	1,018	361	248	437	......	4,585	2,188
20	687	752	606	3,855	891	789	295	285	366	......	3,737	1,350
21	708	723	548	3,973	916	577	248	165	328	......	3,147	1,070
22	701	672	591	4,150	708	570	230	182	409	......	2,015	1,248
23	708	599	916	2,970	916	518	176	215	437	......	1,274	9,055
24	628	621	818	2,694	1,770	489	223	238	418	......	1,490	7,690
25	541	548	782	3,855	847	418	191	230	290	......	1,324	3,737
26	570	533	1,120	5,600	1,665	390	262	248	399	1,385	1,222	2,694
27	643	687	6,790	6,960	1,222	628	223	248	351	1,146	1,172	3,088
28	1,805	680	5,940	7,592	866	811	257	267	390	1,044	1,222	2,694
29	1,420	......	5,020	8,860	694	603	191	577	470	916	3,560	1,595
30	1,455	......	4,222	8,470	651	437	148	782	526	833	3,206	1,595
31	1,146	......	3,029	......	475	......	126	456	......	774	......	1,248
Mean	1,313	663	1,317	4,986	2,226	1,299	259	277	659	1,084	2,058	3,511

Monthly Discharge of West Canada Creek at Kast Bridge, near Herkimer, N. Y.
[Drainage area, 575 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches in drainage area.
1911.					
January	4,222	541	1,313	2.28	2.63
February	1,120	475	663	1.15	1.20
March	6,790	428	1,317	2.29	2.64
April	9,602	1,222	4,986	8.67	9.67
May	13,280	475	2,226	3.87	4.46
June	4,802	390	1,299	2.26	2.52
July	456	126	259	0.450	0.519
August	782	138	277	0.482	0.556
September	1,945	295	659	1.15	1.28
October	2,510	541	1,084	1.89	2.18
November	4,585	840	2,058	3.58	3.99
December	15,840	826	3,511	6.11	7.04

WEST CANADA CREEK AT POLAND, N. Y.

A gaging station was established by this Department on West Canada creek at the first highway bridge below the village of Poland, July 3, 1908. The gage is of the weight-and-chain variety,

contained in a box of standard form, which is fastened to the hand railing of the downstream side of the bridge near the left-hand end. Length of chain from end of weight to copper rivet marker is 22.65 feet. The gage is read each morning and night by Harrison Fisher. Current-meter measurements obtained during 1908–1910 established a consistent rating curve for low stages of the stream. The accompanying discharge tables have been deduced by the use of this curve.

Mean Daily Gage Height, in Feet, of West Canada Creek at Poland, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	5.35	4.65	4.00	5.70	8.75	5.65	3.65	3.25	3.50	4.00	4.55	5.30
2	5.80	4.50	3.90	5.35	10.00	5.25	3.50	3.20	3.25	4.20	4.75	5.05
3	6.35	4.40	3.95	4.90	8.05	4.55	3.45	3.20	3.40	4.30	4.45	4.70
4	6.30	4.25	3.90	4.65	6.65	4.20	3.40	3.25	3.75	4.70	4.25	4.30
5	5.70	4.35	3.75	4.70	5.70	5.00	3.15	3.15	3.65	5.65	4.40	4.15
6	5.60	4.15	3.85	6.63	5.65	6.30	3.15	2.95	4.15	5.05	4.65	4.15
7	5.25	4.10	3.85	7.80	5.00	5.50	3.20	3.25	4.55	5.60	4.70	4.30
8	4.95	4.15	3.75	7.70	5.70	5.10	3.25	3.35	4.55	5.05	5.85	4.40
9	4.60	4.00	3.75	7.10	5.90	4.65	3.25	3.85	4.85	4.75	5.85	4.65
10	4.40	3.95	3.75	6.65	5.45	4.30	3.50	3.80	5.25	4.50	5.35	5.55
11	4.25	3.90	3.70	6.55	5.20	4.25	3.45	3.60	4.50	4.25	5.35	5.70
12	4.45	3.90	3.65	6.65	5.15	4.45	3.35	3.40	4.45	4.05	5.40	7.25
13	4.50	4.00	3.80	6.65	4.85	5.35	3.35	3.10	4.35	3.95	6.35	9.65
14	4.45	3.90	3.85	7.00	4.60	6.10	3.30	3.40	4.35	4.05	5.55	8.30
15	4.40	3.90	4.05	8.70	4.40	5.45	3.15	3.20	3.95	4.45	5.05	6.80
16	4.45	3.85	3.95	8.30	4.10	5.05	3.25	3.20	4.15	4.15	4.75	6.15
17	4.30	3.85	4.00	7.35	4.05	5.05	3.60	3.20	4.10	3.75	4.70	6.55
18	4.10	4.05	3.95	6.35	4.00	4.80	3.45	3.15	3.80	4.45	5.80	6.00
19	4.10	4.20	3.85	6.30	4.05	4.40	3.65	3.35	3.70	5.55	6.60	5.20
20	4.00	4.15	3.95	6.50	4.45	4.05	3.35	3.15	3.55	5.25	6.20	5.50
21	4.05	4.10	3.85	6.75	4.30	3.95	3.25	3.40	3.45	5.05	5.65	5.10
22	4.15	4.05	3.85	6.55	4.15	3.75	3.10	3.30	3.50	5.00	5.10	4.65
23	4.15	4.00	4.05	5.95	4.65	3.75	3.00	3.20	3.45	6.60	4.65	8.25
24	4.00	3.95	4.35	5.75	5.20	3.80	3.35	3.20	3.60	6.35	4.70	7.80
25	4.00	3.90	4.30	6.40	5.65	3.50	3.35	3.25	3.60	5.20	4.55	6.35
26	3.90	4.00	4.25	7.70	5.15	3.65	3.40	3.20	3.50	4.70	4.60	5.55
27	3.95	4.10	5.40	8.10	4.95	3.85	3.25	3.10	3.50	4.55	4.55	5.80
28	4.60	4.00	6.80	8.30	4.35	4.20	3.20	3.60	3.50	4.40	4.55	5.30
29	5.15	......	6.75	8.55	4.05	3.95	3.15	4.55	3.60	4.25	6.05	5.05
30	4.85	......	6.50	8.50	4.00	3.85	3.10	4.10	3.80	4.20	5.90	4.85
31	4.85	......	6.05	......	3.80	......	3.30	3.70	......	4.30	......	4.75

Current-meter Discharge Measurements of West Canada Creek at Poland, N. Y.

DATE.	Hydrographer.	Gage Reading. Beginning.	Gage Reading. Ending.	Gage Reading. Mean.	Meter No.	Lateral interval.	Submergence depth.	Total area.	Total width.	Computed discharge.
1911.						Feet.		Sq. ft.	Feet.	Sec.-ft.
Feb. 10	Clark & Robbins	4.05	4.06	4.06	360	5	0.6	398	134	574
June 7	Barrett & Robbins	5.62	5.55	5.58	462	5	0.6	754	162	2,152

Mean Daily Discharge, Second-feet, of West Canada Creek at Poland, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	1,790	1,073	620	2,278	8,000	2,203	430	240	355	620	991	1,725
2	2,428	950	564	1,790	10,875	1,660	355	220	240	748	1,155	1,444
3	3,320	882	592	1,296	6,532	991	332	220	309	814	916	1,114
4	3,235	780	564	1,073	3,803	748	303	240	480	1,114	780	814
5	2,278	848	480	1,114	2,278	1,390	200	200	430	2,203	882	712
6	2,134	712	536	3,803	2,206	3,235	200	120	712	1,444	1,073	712
7	1,660	684	536	6,010	1,390	1,990	220	240	991	2,134	1,114	814
8	1,343	712	480	5,810	2,278	1,498	240	286	991	1,444	2,503	882
9	1,032	620	480	4,575	2,584	1,073	240	536	1,249	1,155	2,503	1,073
10	882	592	480	3,803	1,820	814	355	508	1,660	950	1,790	2,062
11	780	564	455	3,650	1,603	780	332	405	950	780	1,790	2,278
12	916	564	430	3,803	1,552	916	286	309	916	652	1,855	4,875
13	950	620	508	3,803	1,249	1,790	286	180	848	592	3,320	10,112
14	916	564	536	4,400	1,032	2,904	263	309	848	652	2,062	7,040
15	882	564	652	7,875	882	1,820	200	220	592	916	1,444	4,050
16	916	536	592	7,040	684	1,444	240	220	712	712	1,155	2,986
17	814	536	620	5,082	652	1,444	405	220	684	480	1,114	3,650
18	684	652	592	3,320	620	1,202	332	200	508	916	2,428	2,740
19	684	748	536	3,235	652	882	430	286	455	2,032	3,725	1,603
20	620	712	592	3,575	916	652	286	200	380	1,660	3,058	1,990
21	652	684	536	3,968	814	592	240	309	332	1,444	2,206	1,498
22	712	652	536	3,650	712	480	180	263	355	1,390	1,498	1,073
23	712	620	652	2,662	1,073	480	140	220	332	3,725	1,073	6,935
24	620	592	848	2,350	1,603	508	286	220	405	3,320	1,114	6,010
25	620	564	814	3,405	2,203	355	286	240	405	1,603	991	3,320
26	564	620	780	5,810	1,552	430	309	220	355	1,114	1,032	2,062
27	592	684	1,855	6,625	1,343	536	240	180	355	991	991	2,428
28	1,032	620	4,050	7,040	848	748	220	405	355	882	991	1,725
29	1,552	......	3,968	7,555	652	592	200	991	405	780	2,822	1,444
30	1,249	......	3,575	7,450	620	536	180	684	508	748	2,584	1,249
31	1,249	......	2,822	......	508	......	263	455	......	814	......	1,155
Mean	1,220	677	1,009	4,262	2,050	1,157	274	308	604	1,253	1,699	2,632

Monthly Discharge of West Canada Creek at Poland, N. Y.
[Drainage area, 470 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	3,320	564	1,220	2.60	3.00
February	1,073	536	677	1.44	1.50
March	4,050	430	1,009	2.15	2.48
April	7,875	1,073	4,262	9.07	10.12
May	10,875	508	2,050	4.36	5.03
June	3,235	355	1,157	2.46	2.74
July	430	140	274	0.583	0.672
August	991	120	303	0.655	0.755
September	1,660	240	604	1.29	1.44
October	3,725	480	1,253	2.67	3.08
November	3,725	780	1,699	3.61	4.03
December	10,112	712	2,632	5.60	6.46

WEST CANADA CREEK AT TRENTON FALLS, N. Y.

This gaging station, which is located at the dam of the Utica Gas and Electric Co., was established October 17, 1905, by C. A. Poole. The gage board is secured to face of dam in a vertical position and is placed above the water-surface, the readings being

taken by means of chain and plumb-bob passing on pulley over top of gage. The observations are taken by placing plumb-bob at water-surface and reading the gage at a point marked on chain ten feet above plumb-bob. The elevation of zero of gage is 1,009.56, to which all readings are added. The gage is graduated in feet and inches and is read twice each day by C. W. Young.

The dam is of concrete with masonry coping and has a spillway 97.9 feet long. Another spillway or by-pass two feet lower than crest or main spillway allows the water to pass through a rock channel on each side of dam. The crest of this lower spillway is 163.4 feet long at an elevation of 1,007.12. The discharge over the two spillways has been calculated by means of the weir formula, using coëfficients derived from the United States Geological Survey experiments.

The discharge diverted by the Power Company has been computed from diagrams expressing the flow as a function of the kilowatts used. These diagrams were made from tests made by the Power Company to determine the discharging capacity of the turbines, which are of a special design. These tests were made by computing the discharge over weirs placed in the tail-race.

A daily record is kept of the total kilowatts used in twenty-four hours, also the number of hours every day each turbine runs, there being four turbines in all.

The mean discharge has been calculated from each observation taken at the gage, thereby giving a mean for twelve hours, and the maximum and minimum discharges given in the accompanying table are, therefore, means for twelve hours and do not represent the highest or lowest flow of short duration.

The pondage above the Trenton Falls dam is very limited and the operation of the generators during low water has to be adjusted according to the condition of inflow. The inflow is controlled by pondage above Hinckley dam. Owing to irregularity of operation during low water, the Trenton Falls record is considered approximate only, for the low-water period.

Owing to the drawing down of the pond above the Trenton Falls dam, the average elevation of the water-surface in the pond is deduced from two daily readings, roughly approximate only. The pond level fluctuates often as much as 10 feet during 24 hours in the low-water season. In connection with the calculated dis-

charge at Trenton Falls it may be stated that there are a variety of conditions which tend to make the results of calculations of discharge for that station somewhat too small, especially during low-water periods.

The drainage area at the point of gaging is 375.8 square miles.

Mean Daily Discharge, Second-feet, of West Canada Creek above Power Dam, Trenton Falls, N. Y.

DAY.	Jan.	Feb.*b*	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	No	Dec.
1911.												
1.....	2,096	......	*b*	1,598	6,665	1,592	251	142	239	386	955	1,741
2.....	1,980	......	*b*	1,219	10,181	1,303	132	147	188	531	879	1,421
3.....	3,105	......	*b*	803	5,133	902	244	151	142	535	709	935
4.....	3,018	......	*b*	821	2,463	799	139	164	368	617	1,797	879
5.....	2,324	......	*b*	1,175	1,688	892	230	139	273	1,627	731	877
6.....	2,098	......	366	1,234	1,836	2,603	175	116	265	1,094	728	979
7.....	1,912	......	309	2,445	1,291	1,520	166	191	817	1,405	709	1,091
8.....	2,013	......	306	3,205	1,949	2,463	168	212	518	1,184	2,038	1,075
9.....	1,261	......	282	2,738	1,465	858	139	506	679	969	1,684	410
10.....	872	......	312	1,946	1,696	693	213	315	1,172	736	1,339	1,587
11.....	786	......	240	1,824	1,466	723	181	290	678	608	1,563	2,035
12.....	610	......	261	1,943	1,365	588	227	192	524	1,450	1,323	3,730
13.....	611	......	292	2,227	1,224	2,168	200	120	652	422	2,513	7,467
14.....	676	......	290	2,953	1,010	2,314	184	203	654	441	1,812	5,395
15.....	639	......	355	4,961	712	1,577	170	118	337	892	1,337	3,162
16.....	482	......	341	*a*	590	1,398	139	142	522	435	996	2,145
17.....	572	......	343	3,215	512	1,299	259	144	458	292	665	2,509
18.....	475	......	354	1,939	441	1,141	273	137	279	292	1,327	2,258
19.....	474	......	488	1,938	493	701	263	197	296	1,453	2,400	1,575
20.....	502	......	304	2,146	858	506	218	130	254	1,154	2,040	1,039
21.....	487	......	315	1,742	771	420	191	193	244	1,124	1,577	997
22.....	590	......	328	1,718	540	367	142	167	233	1,249	1,012	1,037
23.....	*b*	......	382	1,775	1,046	297	106	147	343	2,608	667	4,431
24.....	*b*	......	459	1,483	1,518	350	210	147	266	2,553	830	4,331
25.....	*b*	......	496	3,055	1,695	316	168	147	258	1,455	747	2,497
26.....	*b*	......	552	4,087	1,395	272	144	135	262	957	813	1,733
27.....	*b*	......	683	4,899	980	343	174	97	226	788	785	1,677
28.....	*b*	......	2,075	5,021	696	492	141	211	276	735	671	1,257
29.....	*b*	......	2,436	5,748	524	387	162	1,025	297	738	1,822	1,009
30.....	*b*	......	2,255	5,348	488	295	93	487	373	576	1,730	1,089
31.....	*b*	......	1,913	......	281	......	211	284	......	577	......	963
Mean...	125	......	644	259	1,709	986	184	219	403	962	1,274	2,043

a No record. *b* Ice obstruction.

Monthly Discharge of West Canada Creek above Power Dam, Trenton Falls, N. Y.
[Drainage area, 376 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	3,105	474	125	0.333	0.383
February	*b*	*b*	*b*	*b*	*b*
March	2,436	240	644	1.71	1.97
April	5,748	803	259	0.690	0.773
May	10,181	281	1,709	4.54	5.22
June	2,603	272	986	2.62	2.93
July	273	93	184	0.490	0.564
August	1,025	97	219	0.583	0.670
September	1,172	142	403	1.07	1.20
October	2,608	292	962	2.56	2.94
November	2,513	665	1,274	3.39	3.80
December	7,467	410	2,043	5.43	6.24

b Ice obstruction.

WEST CANADA CREEK AT TWIN ROCK BRIDGE, NEAR GRANT, N. Y.

A current-meter gaging station was established at Twin Rock bridge, September 7, 1900, by Robert E. Horton, for the U. S. Geological Survey, by which it has since been maintained in coöperation with this Department. The bridge is 167.5 feet long between abutments, and consists of two spans. The bed is of gravel and cobble, and the entire flow passes underneath at all stages. In the winter the stream becomes completely ice-covered, requiring special discharge measurements. The gage is read each morning and evening by Frank McArthur.

The readings are taken from a gage of special design equipped with a phosphor-bronze tape, attached to the upstream side of the bridge. When the stream is obstructed by logs, the discharge is determined from special measurements. During 1900 a series of low-water measurements was made by boat at a cross-section upstream from the bridge.

The gaging section at Twin Rock bridge is affected at times by backwater from logs which are lodged in the stream, beginning near Hinckley mill-dam and extending upstream nearly to the bridge, or sometimes above the bridge. During periods of log obstruction, as also in winter, when the stream is ice-covered and contains more or less needle ice, it is necessary to estimate the discharge from special current-meter measurements and rating curves. The accompanying tables show the actual readings of the gage, but owing to the complicated conditions it is not practical to publish rating tables. It is to be understood that there is not a uniform or constant relation between the gage height and discharge.

The drainage area at point of gaging is 364 square miles.

Mean Daily Gage Height, in Feet, of West Canada Creek at Twin Rock Bridge, near Grant, N. Y

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	29.86	31.08	30.30	32.09	36.83	32.66	29.36	29.01	29.17	29.53	30.70	31.94
2.....	31.25	30.90	30.19	31.24	39.33	31.80	29.42	29.17	29.18	30.04	30.48	31.18
3.....	33.18	30.66	30.20	31.05	36.09	30.88	29.34	29.00	29.61	29.91	30.12	30.84
4.....	33.00	30.64	30.04	30.63	33.99	30.32	29.28	29.00	29.70	30.18	29.84	31.16
5.....	32.30	30.62	30.00	30.73	32.13	31.26	29.20	28.92	29.41	32.08	30.5C	30.64
6.....	31.82	30.44	30.02	31.75	32.51	34.08	29.12	28.88	30.32	31.16	30.25	30.48
7.....	31.48	30.44	29.86	33.80	31.51	32.52	29.09	29.58	30.62	31.69	30.26	30.58
8.....	31.10	30.42	29.86	34.25	33.07	32.02	29.10	29.18	30.44	31.19	32.60	30.38
9.....	30.94	30.47	29.91	33.59	31.83	31.20	29.35	30.46	30.98	30.68	32.00	30.13
10.....	30.65	30.39	29.90	32.93	32.23	30.84	29.50	29.63	31.78	30.30	31.12	31.55
11.....	30.60	30.43	29.91	32.14	31.91	30.82	29.32	29.08	30.59	29.92	31.48	32.07
12.....	30.72	30.39	29.96	32.01	31.79	31.10	29.04	29.14	30.24	29.66	31.29	33.65
13.....	30.79	30.42	29.95	32.19	31.16	33.66	29.14	28.99	30.36	29.44	32.52	36.82
14.....	30.72	30.35	29.93	33.27	31.08	33.72	29.10	28.92	30.33	29.42	31.59	35.02
15.....	30.70	30.32	30.06	35.78	30.35	32.67	29.02	28.87	29.60	30.38	31.93	32.58
16.....	30.44	30.29	30.02	35.01	29.96	32.25	29.04	28.94	30.15	29.38	32.03	31.58
17.....	30.30	30.26	30.00	33.49	29.81	32.16	29.48	29.02	29.88	28.87	31.78	......
18.....	30.28	30.45	30.03	32.04	29.55	31.71	29.70	28.98	29.49	29.42	32.50	31.46
19.....	30.30	30.68	30.01	32.08	29.65	30.84	29.34	29.08	29.10	31.35	34 86	31.01
20.....	30.16	30.64	30.07	32.08	30.55	30.30	29.11	29.16	28.96	30.99	34.30	31.46
21.....	30.20	30.52	30.06	32.61	30.45	30.06	29.04	29.02	28.90	30.90	32.21	30.90
22.....	30.28	30.46	30.08	32.63	29.89	29.87	29.00	28.94	29.08	30.97	30.96	30.80
23.....	30.09	30.32	30.31	31.65	30.86	29.97	28.94	28.87	29.54	33.60	32.34	36.38
24.....	30.04	30.26	30.53	31.33	32.16	29.66	28.97	28.88	29.30	32.97	32.16	35.10
25.....	30.00	30.22	30.55	33.47	32.35	29.52	29.04	28.92	29.24	31.54	31.92	32.34
26.....	29.93	30.20	30.70	34.29	31.79	29.64	29.04	29.02	29.23	30.76	31.44	31.16
27.....	30.02	30.24	30.94	35.01	30.86	29.95	28.94	29.18	29.28	30.28	30.98	30.86
28.....	30.68	30.39	33.16	35.42	30.51	30.31	28.90	29.13	29.32	30.14	30.16	32.54
29.....	31.26	......	33.94	36.09	29.80	29.94	28.86	31.18	29.30	29.96	32.53	32.52
30.....	31.28	......	33.66	36.09	29.59	29.53	28.90	30.01	29.62	29.80	32.58	32.05
31.....	31.21	......	32.76	......	29.13	......	28.86	29.32	......	29.76	......	32.00

Current-meter Discharge Measurements of West Canada Creek at Twin Rock Bridge, near Grant, N. Y.

DATE.	Hydrographer.	Gage Reading. Beginning.	Gage Reading. Ending.	Gage Reading. Mean.	Meter No.	Lateral interval.	Sub-mergence depth.	Total area.	Computed discharge.	Velocity correction factor.	Corrected discharge.
1911.						Feet.		Sq. ft.	Sec.-ft.		Sec.-ft.
June 8	Barrett & Robbins.	31.80	31.75	31.78	462	5	0.6	825	1,138	0.93	1,059
July 20	R. N. Barrett.....	29.13	29.15	29.14	462	5	0.6	386	213	0.93	198

WEST CANADA CREEK AT WILMURT, N. Y.

A gaging station was established at the highway bridge crossing West Canada creek at Wilmurt, on June 28, 1909, by this Department. This gage consists of an enameled steel scale, reading in feet and tenths from zero to 10 feet. This is attached to planking on the right-hand side of the center pier on the down-stream side of the bridge. In addition a 5-foot section, reading from 10 feet to 15 feet, is attached to a telegraph pole near the Flansburgh residence. The cross-section of the stream at the location of the gage is not favorable for purposes of measurement

in low water. It can be utilized at certain stages of the stream and low-water measurements can be obtained at a more favorable cross-section located a short distance downstream. The observer is Glenn W. Flansburgh, by whom gage readings are taken at 7 A. M. and 4 P. M. each day. This gaging station can be reached only by driving a distance of several miles from Prospect or Hinckley. The drainage area at the gaging station is 224 square miles. The gage is located above the limit of backwater from the proposed Hinckley reservoir, which is being constructed in connection with the State Barge canal.

Mean Daily Gage Height, in Feet, of West Canada Creek at Wilmurt, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	3.60	3.40	3.00	3.80	7.15	4.35	2.45	2.55	2.30	3.20	3.55	3.95
2.....	4.00	3.40	3.00	3.70	7.95	3.70	2.40	2.25	2.30	3.05	3.35	3.65
3.....	4.60	3.30	2.90	3.70	6.05	3.35	2.30	2.20	2.75	2.90	3.15	3.40
4.....	4.40	3.30	2.90	4.15	5.40	3.05	2.30	2.20	2.40	3.55	3.00	3.25
5.....	4.20	3.30	2.90	4.50	4.65	3.55	2.25	2.10	2.35	4.15	2.95	3.15
6.....	4.10	3.30	3.10	4.60	5.05	4.25	2.20	2.10	3.05	4.40	2.90	3.15
7.....	3.90	3.30	3.10	5.00	4.35	3.80	2.20	2.55	3.05	3.90	3.65	3.30
8.....	3.80	3.20	3.00	5.15	4.85	3.65	2.20	2.35	2.95	3.60	4.70	3.20
9.....	3.70	3.10	2.90	4.45	5.25	3.30	2.10	2.80	3.60	3.50	4.40	3.10
10.....	3.70	2.90	2.80	4.30	4.35	3.20	2.10	2.35	3.75	3.30	3.95	3.90
11.....	3.60	2.90	2.70	4.85	4.05	3.15	2.10	2.25	3.15	3.15	4.10	4.20
12.....	3.50	2.90	2.70	5.40	3.75	3.45	2.10	2.20	3.10	3.00	4.00	5.65
13.....	3.50	2.80	2.70	5.70	3.60	4.65	2.10	2.10	3.00	2.90	4.70	7.35
14.....	3.50	2.80	2.85	5.90	3.45	4.45	2.10	2.10	2.75	2.80	4.20	5.70
15.....	3.50	2.80	2.90	5.85	3.15	4.05	2.10	2.10	2.65	2.70	3.85	4.65
16.....	3.40	2.80	3.10	5.55	3.05	3.90	2.10	2.10	3.10	2.70	3.70	4.25
17.....	3.35	3.00	3.05	4.95	3.00	3.75	2.35	2.10	2.85	2.60	3.50	4.60
18.....	3.30	3.10	2.90	4.65	3.00	3.40	2.35	2.10	2.65	3.20	4.40	4.20
19.....	3.30	3.10	2.80	4.60	3.20	3.10	2.20	2.25	2.55	4.15	4.55	3.75
20.....	3.30	3.10	3.00	4.60	3.10	2.95	2.20	2.30	2.50	4.85	4.40	3.35
21.....	3.30	3.10	3.00	5.00	3.00	2.85	2.10	2.20	2.40	3.80	3.95	3.45
22.....	3.40	3.10	2.80	4.80	3.00	2.70	2.10	2.20	2.60	3.80	3.60	3.40
23.....	3.35	3.00	2.85	4.40	3.70	2.70	2.10	2.10	2.50	5.20	3.40	6.90
24.....	3.30	3.00	2.90	4.50	4.50	2.70	2.15	2.10	2.40	4.60	3.35	5.50
25.....	3.30	3.00	3.00	6.55	4.00	2.65	2.20	2.10	2.50	3.95	3.20	4.60
26.....	3.20	3.00	3.10	6.00	3.60	2.50	2.15	2.20	2.50	3.50	3.20	4.15
27.....	3.10	2.90	3.60	6.50	3.10	2.75	2.10	2.20	2.50	3.30	3.20	4.05
28.....	3.40	2.90	4.80	6.55	2.85	2.85	2.10	2.25	2.50	3.25	3.15	4.00
29.....	3.40	......	4.60	6.95	2.65	2.65	2.10	2.25	2.55	3.10	4.70	3.80
30.....	3.40	......	4.45	6.85	2.70	2.55	2.10	2.65	2.75	3.00	4.40	3.60
31.....	3.30	......	4.20	......	2.60	......	2.10	2.45	......	3.05	......	3.50

Current-meter Discharge Measurement of West Canada Creek at Wilmurt, N. Y.

DATE	Hydrographer.	Gage Reading.			Meter No.	Lateral interval.	Submergence depth.	Total area.	Total width.	Computed discharge.
		Beginning.	Ending.	Mean.						
1911.						Feet.		Sq. ft.	Feet.	Sec.-ft.
June 8	Barrett & Robbins....	3.63	3.61	3.62	462	5	0.6	369	144	765

Mean Daily Discharge, Second-feet, of West Canada Creek at Wilmurt, N. Y.

DAY.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1909.						
1	118	98	72	267	190	600
2	98	98	72	215	164	540
3	267	98	72	190	164	443
4	294	98	85	164	215	325
5	215	98	410	138	267	267
6	164	98	240	98	294	294
7	138	98	138	118	294	294
8	138	72	118	294	294	325
9	98	72	98	138	294	356
10	98	72	118	98	294	356
11	98	72	118	98	294	410
12	98	72	98	98	294	410
13	98	72	98	138	294	410
14	85	58	98	138	267	356
15	72	58	72	98	240	383
16	85	98	72	98	443	410
17	98	294	85	118	570	410
18	118	240	72	325	638	410
19	138	215	72	356	868	410
20	138	190	72	267	1,000	410
21	118	138	118	190	1,300	356
22	98	118	98	782	1,457	383
23	138	98	138	1,050	1,570	410
24	508	85	118	958	1,685	476
25	508	72	98	782	1,000	443
26	383	72	72	710	638	383
27	267	72	85	570	540	356
28	215	65	476	294	508	443
29	190	85	410	267	638	476
30	164	118	164	240	638	600
31	138	98	......	190	......	570
Mean	174	106	135	306	378	410

Mean Daily Discharge, Second-feet, of West Canada Creek at Wilmurt, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1	600	600	*a*	3,440	820	916	58	138	98	638	476	190
2	508	540	*a*	3,120	1,200	820	58	85	98	638	508	215
3	476	476	*a*	1,935	1,050	820	54	164	72	540	600	190
4	540	443	*a*	1,740	820	676	58	1,100	54	383	638	190
5	570	410	*a*	1,935	2,195	600	54	1,805	294	356	676	190
6	600	383	*a*	2,060	1,685	1,200	46	1,200	325	325	710	190
7	638	383	*a*	1,805	1,200	2,345	48	958	410	476	710	215
8	600	508	*a*	1,570	1,050	1,457	54	570	356	356	676	267
9	570	570	*a*	2,120	638	1,050	49	443	215	356	638	240
10	540	540	294	1,740	676	782	65	476	138	356	676	294
11	600	600	383	958	744	676	267	2,000	98	356	916	190
12	600	600	540	868	600	868	118	1,300	98	294	820	190
13	540	600	676	600	356	820	72	1,100	85	267	676	190
14	540	600	744	540	267	638	58	710	118	240	600	215
15	476	600	600	570	294	570	58	294	72	240	508	215
16	476	638	540	1,200	325	638	58	215	54	240	356	190
17	540	570	508	1,352	164	443	85	164	50	190	294	190
18	540	540	443	1,150	410	958	72	164	54	190	294	190
19	744	638	476	1,935	1,000	1,000	58	164	54	190	294	138
20	1,200	782	476	2,635	676	540	58	85	50	240	294	138
21	2,120	1,000	540	1,870	1,100	443	58	118	50	294	294	190
22	2,790	820	676	1,457	820	356	85	98	50	356	294	164
23	2,000	638	958	1,404	676	294	118	98	50	356	294	138
24	1,457	540	1,250	1,050	676	215	58	98	54	356	240	294
25	1,200	570	2,345	868	1,740	190	58	98	215	676	240	240
26	1,050	600	3,520	710	2,120	138	58	138	325	710	240	190
27	782	1,000	2,060	868	1,740	98	58	118	118	508	118	240
28	744	*a*	2,345	1,404	1,000	72	2,060	72	*b*	356	98	294
29	676	......	*b*	1,352	638	72	820	58	2,710	215	138	294
30	676	......	*b*	1,050	868	72	410	58	1,570	676	190	410
31	676	......	*b*	......	1,050	......	267	54	......	540	......	540
Mean	841	600	1,020	1,510	923	659	177	456	274	381	450	226

a No record. *b* Discharge above limits of rating curve.

Mean Daily Discharge, Second-feet, of West Canada Creek at Wilmurt, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	820	676	410	1,000	*b*	1,570	118	164	72	540	782	1,150
2	1,200	676	410	916	*b*	916	98	65	72	443	638	868
3	1,870	600	356	916	*b*	638	72	58	267	356	508	676
4	1,630	600	356	1,352	3,040	443	72	58	98	782	410	570
5	1,404	600	356	1,740	1,935	782	65	50	85	1,352	383	508
6	1,300	600	476	1,870	2,490	1,457	58	50	443	1,630	356	508
7	1,100	600	476	2,420	1,570	1,000	58	164	443	1,100	868	600
8	1,000	540	410	2,635	2,195	868	58	85	383	820	2,000	540
9	916	476	356	1,685	2,790	600	50	294	820	744	1,630	476
10	916	356	294	1,510	1,570	540	50	85	958	600	1,150	1,100
11	820	356	240	2,195	1,250	508	50	65	508	508	1,300	1,404
12	744	356	240	3,040	958	710	50	58	476	410	1,200	3,440
13	744	294	240	3,520	820	1,935	50	50	410	356	2,000	*b*
14	744	294	325	*b*	710	1,685	50	50	267	294	1,404	3,520
15	744	294	356	*b*	508	1,250	50	50	215	240	1,050	1,935
16	676	294	476	3,280	443	1,100	50	50	476	240	916	1,457
17	638	410	443	2,345	410	958	85	50	325	190	744	1,870
18	600	476	356	1,935	410	676	85	50	215	540	1,630	1,404
19	600	476	294	1,870	540	476	58	65	164	1,352	1,805	958
20	600	476	410	1,870	476	383	58	72	138	2,195	1,630	638
21	600	476	410	2,420	410	325	50	58	98	1,000	1,150	710
22	676	476	294	2,120	410	240	50	58	190	1,000	820	676
23	638	410	325	1,630	916	240	50	50	138	2,710	676	*b*
24	600	410	356	1,740	1,740	240	54	50	98	1,870	638	3,200
25	600	410	410	*b*	1,200	215	58	50	138	1,150	540	1,870
26	540	410	476	*b*	820	138	54	58	138	744	540	1,352
27	476	356	820	*b*	476	267	50	58	138	600	540	1,250
28	676	356	2,120	*b*	325	325	50	65	138	570	508	1,200
29	676	......	1,870	*b*	215	215	50	65	164	476	2,000	1,000
30	676	......	1,685	*b*	240	164	50	215	267	410	1.630	820
31	600	......	1,404	......	190	......	50	118	......	443	......	744
Mean	833	456	563	2,000	1,038	695	60	80	278	825	1,048	1,257

b Discharge above limits of rating curve.

Monthly Discharge of West Canada Creek at Wilmurt, N. Y.
[Drainage area, 198 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1909.					
July	508	72	174	0.879	1.01
August	294	58	106	0.535	6.17
September	476	72	135	0.682	0.761
October	1,050	98	306	1.55	1.79
November	1,685	164	378	1.91	2.13
December	600	267	410	2.07	2.39
1910.					
January	2,790	476	841	4.25	4.90
February	1,000	383	600	3.03	3.16
March	*a* 3,520	294	1,020	5.15	5.94
April	3,440	540	1,510	7.63	8.51
May	2,195	164	923	4.66	5.37
June	2,345	72	659	3.33	3.72
July	2,060	46	177	0.894	1.03
August	2,000	54	456	2.30	2.65
September	*a* 2,710	50	274	1.38	1.54
October	710	190	384	1.94	2.24
November	916	98	450	2.27	2.53
December	540	138	226	1.14	1.31

a Actual maximum above limits of rating curve.

Monthly Discharge of West Canada Creek at Wilmurt, N. Y.—(Concluded).

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	1,870	476	833	4.21	4.85
February	676	294	456	2.30	2.40
March	2,120	240	563	2.84	3.27
April	*a* 3,520	916	2,000	10.10	11.27
May	*a* 3,040	190	1,038	5.24	6.04
June	1,935	138	695	3.51	3.92
July	118	50	60	0.303	0.349
August	294	50	80	0.404	0.466
September	958	72	278	1.40	1.56
October	2,710	190	825	4.17	4.81
November	2,000	356	1,048	5.29	5.90
December	*a* 3,520	476	1,257	6.35	7.32

a Actual maximum above limits of rating curve.

GRAEFENBURG HYDROPHYSICAL STATION NEAR UTICA, N. Y.

General Description.

This station is located near Graefenburg reservoir, near Utica, about 4 miles south from the Mohawk river, and at altitude 1,100 feet above tide. This station was established in 1905 by Robert E. Horton for the purpose of determining the relation of rainfall, evaporation and ground water in the typical soils of the Mohawk valley. The station was maintained in coöperation with the U. S. Geological Survey preceding May 1, 1907, when it was turned over to this Department. A detailed description of the station, together with the records preceding 1907, may be found in the State Engineer's Report for 1906, supplement, pages 215–245.

The instrumental equipment is as follows: In the instrument shelter are placed a Green standard thermometer, also Green maximum and minimum thermometers; a Lambrecht hair hygrometer; and a 4½-inch Queen aneroid barometer, which has been calibrated by comparison with a standard mercurial barometer.

A hair hygrometer has been used in preference to a wet bulb thermometer, as it is considered more reliable in the hands of an ordinary observer for use in the winter time. It is periodically

compared with a standard wet and dry bulb, or sling psychrometer, and the bundle of hairs is moistened on the first of each month to insure their retention of hygroscopic power.

A standard 8-inch rain gage, United States Weather Bureau pattern, having its rim 4.5 feet above ground is used; also a Robinson anemometer, United States Weather Bureau pattern, made by Julien P. Frieze, having its cups at the same altitude. The anemometer readings are taken directly from the dial twice each day, and the total wind movement is deduced by a reduction table based on Marvin's experiments.

Two Green soil thermometers, having their bulbs inserted in the natural soil beneath the grass sod, one to 2 inches and the other to 24 inches depth, are also used.

During the summer season, the evaporation from free water-surface is measured by means of a rectangular tank 3 feet square and 2 feet deep, buried in the soil to within 3 inches of the top. A brass needle projects in the center to within 3 inches of the top. The evaporation is determined each morning by means of a standard brass cup of 212 cubic centimeters capacity. One cupful represents 0.01 inch depth on the surface of the tank. The observer records the number of cupfuls added or removed each morning, in order to raise or reduce the water-level to the needle point. The standard evaporation tank is not used in the frozen season.

On December 1, 1904, two lysimeters were in place. Two additional lysimeter records were begun June 25, 1905, and another August 12, 1905. The lysimeters are galvanized iron tanks with wrought bands. They were filled by placing the tank (with the cover, which fits over the bottom, removed) upright on the ground, and driving the can downward over a prism of soil, digging away at the sides as much as necessary in order to drive the can downward with a heavy hammer. After the can had been driven downward over a prism of soil to its full depth, the soil was dug away around the bottom, a temporary bottom inserted, and the tank and its contained soil were lifted sufficiently to enable the conical bottom to be put in position. The lysimeter was then placed upon a wooden foundation, and connected with the gage

cans in the adjoining pit by means of a short ½-inch lead pipe. The first two cans installed were filled in this manner with soil *in situ,* which is a heavy clay, formed by disintegration of Utica shale, which lies at a depth of a few feet underneath the surface. Both lysimeters were left with the natural sod surface until August 1, 1905, after which date the grass growing on the second lysimeter has been cut short. Number 3 lysimeter was filled in the same manner with soil comprising a sandy loam surface soil to about 18 inches in depth, and beneath this heavy clay, similar to that in the first two lysimeters.

Numbers 4 and 5 were filled with a medium coarse, rather humus and open sand, found at a distance of about one mile from the station. These lysimeters, after being filled in the manner previously described, were closed at both ends and drawn to the station. When filling in the above described manner, an effort was made to obtain samples of the different soils in an undisturbed natural condition.

In the gage-pit are placed galvanized cans, one foot diameter and one foot deep, with close-fitting covers. Within these are smaller galvanized cans, made very accurately, each 0.535 foot inside diameter, and having a notch in one side, into which the drainage from the lysimeter is conducted through a short section of rubber hose, connected with the lead pipes described.

The smaller gage cans have a sectional area one-tenth that of the surface area of the lysimeters. The depth of the percolation is multiplied ten times in these cans. Care is taken to set the cans level, and the depth of percolation is measured by means of an ordinary rain gage stick.

In case of overflow from the small can into the larger can between two readings, the total amount is measured by successive fillings of the small can. If the rate of infiltration is slow, the water is left in the small can until it becomes nearly full. This is done in order to avoid, if possible, an error in measuring a very small quantity from the gage cans.

During periods of heavy rainfall or snow melting, the lysimeters, notably numbers 1 and 2, have frequently shown percolation in excess of the contemporaneous rainfall. During 1907 the

lysimeters were unearthed, and it was found that excessive ground water probably entered the drain pipe around the bottom of the lysimeter at times; owing to this condition the lysimeter records excepting for dry periods, are void preceding August, 1907. In August, 1907, the bottom of each lysimeter was bedded in cement mortar, which will, it is believed, effectively prevent any entrance of water at the bottoms.

A record of the depth of the natural ground water table below the soil surface is kept in an unused well adjacent to the lysimeter station.

GRAEFENBURG HYDROPHYSICAL RECORDS.

Month of January, 1911.

DAY.	Total wind movement, 24 hours.	Mean vapor pressure.	Mean air temperature.	Mean water temperature.	Mean of maximum and minimum thermometers.	Mean Soil Temperature. 2 inches depth.	24 inches depth.	Mean barometer. *Inches.*	Precipitation. *Inches.*	Evaporation from water. *Inches.*	Percolation Through Lysimeter. *Inches.* 1 Clay, long grass.	2 Clay, short grass.	3 Clay and loam, bare.	4 Sand, long grass.	5 Sand, bare.	Accumulated Snow on Ground in Woods. *Inches.* Snow.	Water.	Depth to water in well. *Feet.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1	261	.193	34			30	36		.16		.22	3.30	.05	0	3.00			
2	160	.229	40			30	35		.02*		3.00	3.40	1.33	2.21	3.15			7.4
3	244	.140	29			31	35		.24*		3.60	.57	.14	.19	1.25			
4	143	.117	26			31	35				.82	.93	.02	.06	1.15			
5	257	.046	11			31	35		.02*		0	1.50	0	0	.51			
6	208	.073	17			31	35				.02	1.70	.02	.03	0			
7	144	.105	28			31	35				.01	1.30	.01	.01	0			
8	279	.119	35			30	35		.20*		0	1.26	.09	.01	0			
9	338	.086	20			30	35		.10*		.05	2.26	.01	.05	0			6.8
10	150	.069	21			30	35				.30	.13	0	0	0			
11	212	.166	33			30	35		.12		.80	0	.02	0	2.49			
12	123	.124	24			30	35				.50	3.27	.02	0	1.45			
13	100	.133	26			30	35		.14		.26	3.20	0	0	3.00			
14	132	.165	31			30	35		.05		.26	3.30	.02	0	3.15			
15	248	.082	15			26	35		.06*		.34	3.33	0	.07	1.80			
16	168	.037	6			25	35				.04	2:60	0	.01	.07			6.7
17	73	.035	6			24	35				0	.08	0	0	.03			
18	153	.043	12			21	35				0	0	0	0	0			
19	275	.087	24			21	35		.01*		0	0	0	0	0			
20	159	.108	29			24	34		.01*		0	0	0	0	0			
21	180	.092	30			28	34		.02*		0	.02	0	0	.20			
22	184	.047	16			28	34				0	.20	0	0	0			
23	146	.077	21			28	34				0	.30	.05	0	0			6.6
24	228	.107	30			28	34				.08	0	.01	0	.14			
25	10	.142	32			28	34				0	.05	.05	.03	.16			
26	278	.201	34			28	34		.05		0	.05	.02	.04	2.41			
27	202	.202	33			30	34		.55		.43	.80	.20	.05	.53			
28	290	.111	29			28	34				.15	1.30	.06	.06	1.97			
29	268	.128	31			29	34		.06		.29	1.40	.04	.02	.11			
30	401	.071	11			29	34		.06*		0	1.10	0	.05	0			6.9
31	102	.048	9			26	33				0	.05	0	0	0			

* Snow.

GRAEFENBURG HYDROPHYSICAL RECORDS — (*Continued*).

Month of February, 1911.

DAY.	Total wind movement, 24 hours.	Mean vapor pressure.	Mean air temperature.	Mean water temperature.	Mean of maximum and minimum thermometers.	MEAN SOIL TEMPERATURE. 2 inches depth.	MEAN SOIL TEMPERATURE. 24 inches depth.	Mean barometer. *Inches.*	Precipitation. *Inches.*	Evaporation from water. *Inches.*	PERCOLATION THROUGH LYSIMETER. *Inches.* 1 Clay, long grass.	2 Clay, short grass.	3 Clay and loam, bare.	4 Sand, long grass.	5 Sand, bare.	ACCUMULATED SNOW ON GROUND IN WOODS. *Inches.* Snow.	Water.	Depth to water in well. *Feet.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1	227	.057	14	......	......	26	33	......	.04*	......	0	0	0	0	0	......	......	......
2	293	.048	9	......	......	26	33	......	.04*	......	0	0	0	0	0	......	......	......
3	236	.071	12	......	......	22	33	......	.35*	......	0	0	0	0	0	......	......	......
4	396	.100	22	......	......	22	33	......	.22*	......	0	0	0	0	0	......	......	......
5	162	.027	4	......	......	22	33	......	......	......	0	0	0	0	0	......	......	......
6	442	.034	3	......	......	21	33	......	.22*	......	0	0	0	0	0	......	......	6.4
7	202	.061	13	......	......	21	33	......	.02*	......	0	0	0	0	0	......	......	......
8	157	.110	27	......	......	21	32	......	.13*	......	0	0	0	0	0	......	......	......
9	103	.092	22	......	......	21	31	......	......	......	0	0	0	0	0	......	......	......
10	314	.107	23	......	......	21	31	......	.03*	......	0	0	0	0	0	......	......	......
11	248	.130	26	......	......	21	31	......	.03*	......	0	0	0	0	0	......	......	......
12	100	.167	31	......	......	21	31	......	.11*	......	0	0	0	0	0	......	......	......
13	227	.117	24	......	......	21	31	......	.08*	......	0	0	0	0	0	......	......	6.1
14	368	.072	18	......	......	21	31	......	.27*	......	0	0	0	0	0	......	......	......
15	156	.036	12	......	......	21	31	......	......	......	0	.15	0	0	0	......	......	......
16	180	.072	21	......	......	25	32	......	......	......	0	0	0	0	0	......	......	......
17	312	.173	33	......	......	25	32	......	.40*	......	.12	.95	.02	0	1.33	......	......	......
18	94	.133	23	......	......	25	33	......	.03*	......	.02	1.11	0	0	.87	......	......	......
19	296	.080	16	......	......	25	33	......	......	......	0	.10	0	0	0	......	......	......
20	150	.054	11	......	......	25	33	......	.09*	......	0	.02	0	0	0	......	......	6.5
21	291	.057	10	......	......	25	33	......	.02*	......	0	0	0	0	0	......	......	......
22	267	.077	17	......	......	26	33	......	.07*	......	0	0	0	0	0	......	......	......
23	267	.088	19	......	......	26	33	......	.02*	......	0	0	0	0	0	......	......	......
24	174	.110	24	......	......	26	33	......	.01*	......	0	0	0	0	0	......	......	......
25	168	.107	27	......	......	26	33	......	......	......	0	0	.01	0	.03	......	......	......
26	236	.110	28	......	......	26	33	......	.04	......	0	0	.07	0	.21	......	......	......
27	369	.081	18	......	......	26	33	......	......	......	0	.28	.22	0	1.15	......	......	6.2
28	356	.057	12	......	......	26	33	......	.01*	......	0	1.00	.04	0	1.80	......	......	......

* Snow.

GRAEFENBURG HYDROPHYSICAL RECORDS — (*Continued*).

Month of March, 1911.

DAY.	Total wind movement, 24 hours.	Mean vapor pressure.	Mean air temperature.	Mean water temperature.	Mean of maximum and minimum thermometers.	Mean Soil Temperature. 2 inches depth.	Mean Soil Temperature. 24 inches depth.	Mean barometer. *Inches.*	Precipitation. *Inches.*	Evaporation from water. *Inches.*	Percolation Through Lysimeter. *Inches.* 1 Clay, long grass.	2 Clay, short grass.	3 Clay and loam, bare.	4 Sand, long grass.	5 Sand, bare.	Accumulated Snow on Ground in Woods. *Inches.* Snow.	Water.	Depth to water in well. *Feet.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1	229	.072	23			26	33				0	.10	0	0	.15			
2	170	.076	21			26	33		.01*		0	0	0	0	0			
3	128	.083	21			26	33				0	0	0	0	0			
4	181	.077	19			26	33		.01*		0	0	0	0	0			
5	165	.068	18			26	33		.20*		0	0	0	0	0			
6	140	.064	16			26	33				0	0	0	0	0			†
7	172	.046	14			26	33				0	0	0	0	0			
8	71	.071	26			26	33				0	0	.02	0	0			
9	220	.080	30			26	33		.29*		0	0	0	0	.10			
10	232	.086	28			26	33		.04*		0	0	0	0	0			
11	246	.080	29			26	33				0	0	.01	0	.05			
12	176	.077	32			26	33		.05		0	0	0	0	.02			
13	106	.080	32			26	33				0	0	.01	0	.04			†
14	116	.083	30			26	33		.06*		0	0	0	0	.03			
15	277	.101	21			26	33		.02*		0	0	0	0	.05			
16	481	.060	16			26	33				0	0	0	0	.02			
17	174	.092	21			26	33		.10*		0	0	0	0	.14			
18	131	.130	27			26	33				0	0	.02	.38	.49			
19	206	.101	23			26	33		.33*		0	1.00	0	.11	.10			
20	206	.096	24			26	33		.15*		0	.20	0	0	.10			5.4
21	378	.100	32			26	33				0	.38	.01	1.00	.95			
22	264	.094	30			26	33		.21*		0	.62	.01	.15	.20			
23	316	.063	15			26	33		.02*		.52	.10	0	.99	.97			
24	137	.056	14			26	33				.25	1.05	0	.30	.28			
25	130	.071	18			26	33				.84	.90	0	.56	.70			
26	288	.132	25			26	33		.30*		1.10	.30	0	.35	.21			
27	202	.150	32			26	33		.43*		3.50	3.00	.09	3.60	3.20			6.2
28	274	.101	24			26	33		.04*		.08	2.50	0	.15	2.30			
29	152	.108	26			26	33		.13*		0	.20	0	0	.20			
30	175	.103	22			26	33		.28*		0	0	0	0	0			
31	170	.102	23			26	33		.07*		0	0	0	0	.10			

* Snow. † Full of snow.

GRAEFENBURG HYDROPHYSICAL RECORDS — (*Continued*).

Month of April, 1911.

DAY.	Total wind movement, 24 hours.	Mean vapor pressure.	Mean air temperature.	Mean water temperature.	Mean of maximum and minimum thermometers.	MEAN SOIL TEMPERATURE. 2 inches depth.	MEAN SOIL TEMPERATURE. 24 inches depth.	Mean barometer. *Inches.*	Precipitation. *Inches.*	Evaporation from water. *Inches.*	PERCOLATION THROUGH LYSIMETER. *Inches.* 1 Clay, long grass.	2 Clay, short grass.	3 Clay and loam, bare.	4 Sand, long grass.	5 Sand, bare.	ACCUMULATED SNOW ON GROUND IN WOODS. *Inches.* Snow.	Water.	Depth to water in well. *Feet.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1	246	.093	21			22	33		.04*		0	0	0	.05	.22			
2	238	.104	22			22	33				.12	.90	0	.16	.16			
3	217	.102	27			24	33				.60	.30	0	.04	.12			9.3
4	195	.103	29			28	33		.60		0	0	0	.20	.33			
5	309	.214	42			30	33		.02		.30	.78	0	.80	1.20			
6	256	.198	48			32	33				2.50	3.60	.20	.48	3.30			
7	217	.137	33			32	33				.23	2.20	.16	.32	3.15			
8	143	.134	33			32	33		.19*		.17	.15	.13	.10	.06			
9	66	.154	34			32	33		.02*		.11	.20	0	.25	.02			
10	95	.137	36			32	33				.09	.13	.20	.16	.01			7.5
11	105	.095	38			32	33				0	0	.25	0	0			
12	267	.063	26			32	33				0	0	.13	0	0			
13	202	.166	38			32	33		.01		0	0	0	0	0			
14	174	.182	34			32	33		.15		.10	.40	.09	.64	1.11			
15	156	.097	26			32	33				.10	.22	.11	.36	3.00			
16	284	.071	25			32	33		.02*		.03	.60	.03	.08	1.10			
17	146	.128	31			35	33				.03	.30	.04	0	1.09			6.8
18	153	.118	31			36	33				.03	.20	.02	0	2.00			
19	*a*	.130	35			38	33		.01		.01	1.40	.01	0	2.30			
20	*a*	.109	24			33	33				0	.50	0	.02	.15			
21	144	.122	28			34	33		.02*		.03	0	.06	.03	0			
22	145	.133	28			32	33		.11		0	0	0	0	0			
23	139	.168	38			35	33				0	0	0	0	0			
24	145	.147	36			33	33				0	0	0	0	0			6.2
25	141	.143	37			35	34				0	.03	.01	.01	0			
26	121	.154	44			38	34				0	0	.03	0	0			
27	154	.167	45			46	37				.01	.02	0	.01	0			
28	98	.242	56			50	38				.03	0	0	0	0			
29	132	.291	60			52	40				0	0	0	0	0			
30	200	.466	64			54	42		.03		.01	0	0	0	0			

a No record. * Snow.

GRAEFENBURG HYDROPHYSICAL RECORDS — (*Continued*).

Month of May, 1911.

DAY.	Total wind movement, 24 hours.	Mean vapor pressure.	Mean air temperature.	Mean water temperature.	Mean of maximum and minimum thermometers.	Mean Soil Temperature. 2 inches depth.	Mean Soil Temperature. 24 inches depth.	Mean barometer. *Inches.*	Precipitation. *Inches.*	Evaporation from water. *Inches.*	Percolation Through Lysimeter. *Inches.* 1 Clay, long grass.	2 Clay, short grass.	3 Clay and loam, bare.	4 Sand, long grass.	5 Sand, bare.	Accumulated Snow on Ground in Woods. *Inches.* Snow.	Water.	Depth to water in well. *Feet.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1	197	.549	65			56	42		.90		0	0	0	0	0			5.9
2	173	.392	57			50	42		.04*		0	0	0	0	0			
3	216	.236	46			46	42		.02*		0	0	0	0	0			
4	318	.184	43			38	41				0	0	0	0	0			
5	172	.135	38			32	40				0	0	0	0	0			
6	139	.119	37			34	40				0	0	0	0	0			
7	246	.176	54			47	40				.12	0	0	0	0			
8	146	.269	61			52	42				.10	0	0	0	0			5.2
9	178	.341	58			54	44				0	.01	.02	0	0			
10	120	.418	63			55	44				0	0	0	0	0			
11	154	.447	64			57	45				0	0	0	0	0			
12	147	.443	66			60	46				0	0	0	0	0			
13	170	.295	54			55	43				0	0	0	0	0			
14	160	.227	56			57	48				0	0	0	0	0			
15	118	.317	61			56	43		.03		0	0	0	0	0			6.7
16	106	.358	55			58	48		.02		0	0	0	0	0			
17	108	.411	61			60	49		.01		0	0	0	0	0			
18	97	.469	66			67	50				0	0	0	0	0			
19	139	.607	67			63	51		.74		0	0	0	0	0			
20	87	.417	65			60	53				0	0	0	0	0			
21	96	.592	73			61	54				0	0	0	0	0			
22	78	.659	75			68	54				0	0	0	0	.04			6.2
23	167	.634	69			68	54		1.70		0	0	0	0	0			
24	104	.423	56			63	54		.14		0	0	0	.04	0			
25	87	.470	60			60	55				0	0	0	0	0			
26	87	.450	67			62	55				0	0	0	0	0			
27	60	.504	71			66	55				0	0	0	0	0			
28	62	.549	73			68	56				0	0	0	0	0			
29	147	.388	67			64	56		.02		0	0	0	0	0			5.9
30	172	.326	63			67	57				0	0	0	0	0			
31	74	.371	55			64	58		.91		0	0	0	0	.06			

* Snow.

GRAEFENBURG HYDROPHYSICAL RECORDS — (*Continued*).

Month of June, 1911.

DAY.	Total wind movement, 24 hours.	Mean vapor pressure.	Mean air temperature.	Mean water temperature.	Mean of maximum and minimum thermometers.	MEAN SOIL TEMPERATURE. 2 inches depth.	MEAN SOIL TEMPERATURE. 24 inches depth.	Mean barometer. *Inches.*	Precipitation. *Inches.*	Evaporation from water. *Inches.*	PERCOLATION THROUGH LYSIMETER. *Inches.* 1 Clay, long grass.	2 Clay, short grass.	3 Clay and loam, bare.	4 Sand, long grass.	5 Sand, bare.	ACCUMULATED SNOW ON GROUND IN WOODS. *Inches.* Snow.	Water.	Depth to water in well. *Feet.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1	170	.342	54			57	58				0	0	0	0	0			
2	130	.366	62			58	57			.10	0	0	0	0	0			
3	57	.314	62			64	56			.15	0	0	0	0	0			
4	122	.345	58			64	57		.50	.02	0	0	0	0	0			
5	245	.388	52			54	56		1.35	.06	.57	.06	.02	.05	.04			6.1
6	216	.463	59			56	56			.07	.51	.23	0	.59	.02			
7	170	.439	58			58	56		.10	.30	.17	0	0	.02	.01			
8	65	.405	65			64	56			.18	.03	.10	.01	.13	.01			
9	79	.425	67			65	56			.11	.02	0	0	0	0			
10	77	.413	69			66	56		.15	.06	0	.01	0	.01	0			
11	160	.592	70			66	56		.08	.04	.03	.03	.01	0	0			
12	120	.522	61			62	58		.63	.12	0	0	0	.12	0			6.2
13	111	.486	59			64	58		.14	.02	.01	0	0	.05	.01			
14	119	.417	55			62	58			.07	0	.07	0	.06	.01			
15	141	.387	56			60	59			.15	.04	.07	0	.06	.01			
16	79	.350	57			60	59		.38	.11	0	.01	0	0	0			
17	87	.370	64			62	59			.18	0	.02	0	0	0			
18	80	.385	63			64	59			.13	0	0	0	0	0			
19	111	.412	72			64	59		.02	.21	.05	.02	0	0	.01			6.6
20	147	.357	60			64	59			.14	.01	.02	0	0	0			
21	118	.341	58			60	59			.10	0	0	0	0	0			
22	106	.459	62			60	58		.30	.02	0	0	0	0	0			
23	102	.408	64			62	58			.09	0	0	0	0	0			
24	120	.375	64			64	58			.06	.02	.01	0	0	0			
25	116	.480	61			62	58		.12	.21	0	0	0	0	0			
26	141	.591	66			63	58		.37	.17	0	0	0	0	0			6.4
27	80	.633	68			70	58		.11	.01	0	0	0	0	0			
28	165	.461	64			68	58			.15	0	0	0	0	0			
29	90	.369	56			62	59			.18	0	0	.01	0	0			
30	80	.422	66			63	60			.17	0	0	0	0	0			

GRAEFENBURG HYDROPHYSICAL RECORDS — (*Continued*).

Month of July, 1911.

DAY.	Total wind movement, 24 hours.	Mean vapor pressure.	Mean air temperature.	Mean water temperature.	Mean of maximum and minimum thermometers.	Mean Soil Temperature. inches depth.	Mean Soil Temperature. 24 inches depth.	Mean barometer. *Inches.*	Precipitation. *Inches.*	Evaporation from water. *Inches.*	Percolation Through Lysimeter. *Inches.* 1 Clay, long grass.	2 Clay, short grass.	3 Clay and loam, bare.	4 Sand, long grass.	5 Sand, bare.	Accumulated Snow on Ground in Woods. *Inches.* Snow.	Water.	Depth to water in well. *Feet.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1	82	.517	76			66	60			.19	0	0	0	0	0			
2	85	.674	80			70	60			.20	0	0	0	0	0			
3	76	.735	83			73	61			.22	.01	0	0	0	.01			8.9
4	69	.736	82			74	61			.21	0	0	0	0	0			
5	128	.721	80			72	62			.17	0	0	0	0	0			
6	86	.686	76			73	62			.20	0	0	0	0	0			
7	88	.533	74			72	63			.23	0	0	0	0	0			
8	136	.609	78			70	64			.24	0	0	0	0	0			
9	94	.772	80			73	64			.18	0	0	0	0	0			
10	79	.787	79			72	64			.14	0	0	0	0	0			9.6
11	72	.742	71			73	64			.18	0	0	0	0	.01			
12	157	.489	60			70	64			.22	0	0	0	0	0			
13	93	.419	64			67	64			.20	0	0	0	0	0			
14	85	.425	70			68	64			.29	0	0	0	0	0			
15	150	.469	74			68	64			.22	0	0	0	0	0			
16	119	.540	69			72	64		.20	.31	0	0	0	0	0			
17	119	.513	66			66	64		.30	.06	0	0	0	0	0			11.8
18	136	.358	64			68	64			.17	0	0	0	0	0			
19	137	.446	64			65	63		.21	.11	0	0	0	0	0			
20	109	.490	62			68	63			.15	0	0	0	0	0			
21	93	.419	70			69	63			.14	0	0	0	0	0			
22	156	.371	63			60	63			.16	0	0	0	0	0			
23	145	.450	64			65	63		.17	.09	0	0	0	0	0			
24	153	.421	66			66	63		.03	.23	0	0	0	0	0			12.9
25	168	.318	58			60	63			.12	0	0	0	0	0			
26	66	.364	60			62	63		.09	.26	0	0	0	.01	0			
27	73	.407	62			64	63			.14	0	0	0	0	0			
28	88	.448	84			66	63			.16	0	0	0	.01	0			
29	70	.414	70			68	63		.27	.10	0	0	0	0	0			
30	79	.572	74			70	63			.10	0	0	0	0	0			
31	68	.542	65			74	63			.17	0	0	0	0	0			13.1

GRAEFENBURG HYDROPHYSICAL RECORDS — (*Continued*).

Month of August, 1911.

DAY.	Total wind movement, 24 hours.	Mean vapor pressure.	Mean air temperature.	Mean water temperature.	Mean of maximum and minimum thermometers.	Mean Soil Temperature. 2 inches depth.	Mean Soil Temperature. 24 inches depth.	Mean barometer. *Inches.*	Precipitation. *Inches.*	Evaporation from water. *Inches.*	Percolation Through Lysimeter. *Inches.* 1 Clay, long grass.	2 Clay, short grass.	3 Clay and loam, bare.	4 Sand, long grass.	5 Sand, bare.	Accumulated Snow on Ground in Woods. *Inches.* Snow.	Water.	Depth to water in well. *Feet.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1	102	.604	75	......	......	68	63	......	......	.11	0	0	0	0	0	......	......	......
2	142	.562	69	......	......	69	63	......	......	.14	0	0	0	0	0	......	......	......
3	108	.606	70	......	......	73	64	......	.05	.13	0	0	0	0	0	......	......	......
4	92	.588	68	......	......	71	64	......	.33	.09	0	0	0	0	0	......	......	......
5	117	.623	75	......	......	72	64	......	......	.11	0	0	0	0	0	......	......	......
6	83	.633	72	......	......	74	65	......	.21	.09	0	0	0	0	0	......	......	......
7	118	.626	78	......	......	73	66	......	......	.13	0	0	0	0	0	......	......	13.2
8	180	.624	70	......	......	73	66	......	.29	.19	0	0	0	0	0	......	......	......
9	96	.510	72	......	......	71	66	......	......	.12	0	0	0	0	0	......	......	......
10	92	.574	73	......	......	70	66	......	......	.14	0	0	0	0	0	......	......	......
11	98	.556	65	......	......	66	66	......	.16	.10	0	0	0	0	0	......	......	......
12	63	.476	65	......	......	65	66	......	......	.10	0	0	0	0	0	......	......	......
13	84	.370	65	......	......	87	66	......	......	.12	0	0	0	0	0	......	......	......
14	59	.392	65	......	......	68	66	......	......	.16	0	0	0	0	0	......	......	13.8
15	140	.529	65	......	......	66	65	......	.36	.19	0	0	0	0	0	......	......	......
16	154	.472	64	......	......	64	65	......	.08	.22	0	0	0	0	0	......	......	......
17	123	.497	70	......	......	66	......	......	......	.13	0	0	0	0	0	......	......	......
18	152	.445	61	......	......	68	......	......	.35	.07	0	0	0	0	0	......	......	......
19	140	......	......	......	......	64	......	......	......	.10	0	0	0	0	0	......	......	......
20	136	......	......	......	......	62	......	......	......	.14	0	0	0	0	0	......	......	......
21	117	.286	65	......	......	64	......	......	......	.10	0	0	0	0	0	......	......	15.2
22	182	.348	69	......	......	66	......	......	......	.22	0	0	0	0	0	......	......	......
23	96	.355	60	......	......	65	......	......	......	.19	0	0	0	0	0	......	......	......
24	68	.375	57	......	......	61	......	......	.29	0	0	0	0	0	0	......	......	......
25	109	.468	57	......	......	60	......	......	.43	.10	0	0	0	0	0	......	......	......
26	122	.541	71	......	......	66	......	......	......	.10	0	0	0	0	0	......	......	......
27	132	.635	72	......	......	68	......	......	......	.12	0	0	0	0	0	......	......	......
28	122	.571	64	......	......	64	......	......	1.63	.33	0	0	0	0	0	......	......	15.5
29	83	.331	52	......	......	63	......	......	......	.09	.01	0	0	0	0	......	......	......
30	102	.296	52	......	......	56	......	......	......	.11	0	0	.01	0	.05	......	......	......
31	147	.370	54	......	......	58	......	......	......	.11	0	.03	0	0	0	......	......	......

GRAEFENBURG HYDROPHYSICAL RECORDS — (*Continued*).

Month of September, 1911.

DAY.	Total wind movement, 24 hours.	Mean vapor pressure.	Mean air temperature.	Mean water temperature.	Mean of maximum and minimum thermometers.	Mean Soil Temperature. 2 inches depth.	Mean Soil Temperature. 24 inches depth.	Mean barometer. *Inches.*	Precipitation. *Inches.*	Evaporation from water. *Inches.*	Percolation Through Lysimeter. *Inches.* 1 Clay, long grass.	2 Clay, short grass.	3 Clay and loam, bare.	4 Sand, long grass.	5 Sand, bare.	Accumulated Snow on Ground in Woods. *Inches.* Snow.	Water.	Depth to water in well. *Feet.*
(1)	(2)	(3)	(4)	(5)	(3)	(7)	(8)b	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1	150	.417	66			62				.13	0	0	0	0	0			
2	177	.385	67			64			.75	.57	0	0	0	0	0			
3	104	.316	60			62				.11	0	0	0	0	0			
4	107	.294	59			62				.14	0	0	0	0	0			15.9
5	181	.455	60			61			.71	.09	0	0	0	0	.23			
6	46	.523	64			64			.02	.06	.01	0	0	0	.27			
7	152	.483	57			60			1.28	.12	0	0	0	0	0			
8	155	.445	55			58			.59	.19	2.09	2.46	2.70	1.93	.71			
9	89	.487	62			59			.51	.05	.52	1.20	0.88	1.13	.86			
10	67	.469	60			61			.02	.06	.07	.14	.11	.32	.48			
11	123	.509	62			62			.10	.24	.02	.01	.14	.01	.35			13.4
12	150	.297	52			62				.18	.02	0	.08	0	.03			
13	69	.193	44			58				.16	0	0	0	0	0			
14	153	.195	44			56				.10	0	.02	.01	.01	.10			
15	130	.376	55			54			.25	.05	0	.01	.01	0	.02			
16	101	.387	71			60				.10	0	.01	0	0	.04			
17	88	.434	68			62				.14	0	0	0	0	0			
18	72	.384	63			63				.13	0	0	0	0	0			9.6
19	96	.409	64			64				.14	0	0	0	0	0			
20	96	.436	64			60				.17	0	0	0	0	0			
21	165	.416	58			60			.35	.05	0	0	0	0	0			
22	94	.422	60			56				.10	0	0	0	0	0			
23	141	.447	65			59				.16	0	0	0	0	0			
24	92	.515	70			62			.06	.14	0	0	0	0	0			
25	127	.554	64			64			.15	.02	0	0	0	0	0			8.8
26	173	.328	54			60				.11	0	0	0	0	0			
27	160	.235	40			57			.08	0	0	0	0	0	0			
28	112	.167	48			56			.11	.25	0	0	0	0	0			
29	142	.201	44			54			.58	.18	.01	.01	.03	.01	.02			
30	128	.209	45			48				.06	0	0	0	0	0			

b Thermometer broken.

GRAEFENBURG HYDROPHYSICAL RECORDS — (*Continued*).

Month of October, 1911.

DAY.	Total wind movement, 24 hours.	Mean vapor pressure.	Mean air temperature.	Mean water temperature.	Mean of maximum and minimum thermometers.	Mean Soil Temperature. 2 inches depth.	Mean Soil Temperature. 24 inches depth.	Mean barometer. *Inches.*	Precipitation. *Inches.*	Evaporation from water. *Inches.*	Percolation Through Lysimeter. *Inches.* 1 Clay, long grass.	2 Clay, short grass.	3 Clay and loam, bare.	4 Sand, long grass.	5 Sand, bare.	Accumulated Snow on Ground in Woods. *Inches.* Snow.	Water.	Depth to water in well. *Feet.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1	138	.247	44			47			.51	.02	0	0	0	.24	.01			
2	88	.226	43			50				.06	.04	.48	.34	.07	0			7.9
3	103	.192	40			46			.30	0	.04	.08	.09	.07	.02			
4	364	.255	48			51			.18	0	.11	.08	.06	.08	.02			
5	170	.204	41			46				.04	.03	.07	.02	.08	.11			
6	142	.207	40			44			.45	.06	.06	.05	.22	.07	.04			
7	98	.219	42			42				.06	.05	.03	.04	.02	.04			
8	97	.206	42			45				.09	.38	.43	.30	.42	.09			
9	83	.262	47			48				.10	.20	.28	.11	.26	.20			6.8
10	104	.308	50			50				.08	.01	.02	.01	.03	.23			
11	80	.378	52			54			.09	.19	0	.02	.01	0	.03			
12	163	.266	48			54				13	0	.02	.01	0	0			
13	110					46				.15	.03	.01	.02	0	.03			
14	56					46				.17	.04	0	.01	0	.02			
15	109					49				.13	0	0	0	0	0			
16	97					49				.12	.02	.01	0	0	.01			6.9
17	218					48			.42	.04	.01	.02	0	0	.01			
18	78					50			.23	.01	0	0	0	0	.02			
19	140	.362	51			50			.07	.17	0	0	0	0	0			
20	104	.434	56			52			.03	.07	.02	.01	.02	.12	.04			
21	125	.423	55			50			.05	.12	0	0	0	0	0			
22	151	.360	52			52			1.02	.04	.49	.42	.41	.27	.06			
23	154	.213	42			51				.08	.10	.49	.23	.42	.06			6.8
24	137	.179	40			48				.09	.06	.23	.02	.14	.15			
25	177	.167	43			44				.12	.19	.02	.09	.02	.09			
26	137	.217	41			45			.02	.13	.17	.04	.01	.03	.13			
27	92	.180	35			42			.15	.33	0	.01	0	.01	.01			
28	69	.176	35			40				.12	0	.01	0	.01	.03			
29	171	.169	40			40				.10	0	.01	.01	0	.03			
30	97	.232	44			44			.30	.09	.02	.02	0	.02	.04			6.8
31	134	.242	41			44			.37		.07	.02	.15	.11	0			

GRAEFENBURG HYDROPHYSICAL RECORDS — (*Continued*).

Month of November, 1911.

DAY.	Total wind movement, 24 hours.	Mean vapor pressure.	Mean air temperature.	Mean water temperature.	Mean of maximum and minimum thermometers.	Mean Soil Temperature. 2 inches depth.	Mean Soil Temperature. 24 inches depth.	Mean barometer. *Inches.*	Precipitation. *Inches.*	Evaporation from water. *Inches.*	Percolation Through Lysimeter. *Inches.* 1 Clay, long grass.	2 Clay, short grass.	3 Clay and loam, bare.	4 Sand, long grass.	5 Sand, bare.	Accumulated Snow on Ground in Woods. *Inches.* Snow.	Water.	Depth to water in well. *Feet.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1	80	.192	37			43	49				.03	.13	.16	.04	0			
2	281	.128	30			40	48		.02*		.07	.11	.02	.02	.11			
3	150	.130	31			36	47				.04	.50	.04	.06	1.60			
4	77	.145	38			36	47				.08	1.37	.09	.07	1.45			
5	115	.147	38			36	44				0	.42	.06	.03	.49			
6	234	.197	38			36	45		.32		.03	.07	.01	.02	.03			6.9
7	329	.209	39			40	45		.12		.14	.01	.07	.09	.04			
8	168	.176	35			38	45		.07		.10	.03	.08	.11	.05			
9	174	.180	38			38	45		.02		.04	.07	.08	.03	.06			
10	69	.188	38			38	45				.05	.04	.03	.08	.06			
11	407	.221	44			42	45				.01	.05	.04	.01	.02			
12	288	.166	40			38	45		.40		.01	.02	.01	.02	.03			
13	249	.091	26			35	45				.02	.02	.01	.02	.02			6.5
14	232	.118	27			34	45		.05*		.10	.09	.08	.03	.01			
15	213	.135	28			32	45		.06*		.12	.26	.06	.21	.03			
16	162	.112	24			33	45		.04*		.40	.81	.06	.40	.12			
17	142	.098	20			34	44		.50		.33	.24	.08	.46	.14			
18	328	.115	25			34	44		.08		.51	1.53	.32	.52	1.54			
19	245	.118	30			36	43		.02*		.22	3.05	.34	.43	2.10			
20	146	.126	29			34	42		.08*		0	.30	.02	.03	.11			7.3
21	191	.117	24			28	42				0	.06	.02	.03	.03			
22	135	.083	23			31	42				.01	.13	.10	.03	.03			
23	170	.134	29			28	42		.19		.03	.01	.02	.04	.03			
24	204	.139	27			29	41		.03*		.03	.01	.02	.04	.02			
25	174	.107	24			33	40		.02*		.04	.31	.04	.04	.02			
26	149	.121	29			32	40		.02*		.05	.11	.02	.02	.02			
27	211	.137	35			32	40				.02	.26	.05	.03	.03			8.2
28	322	.155	36			33	40		.10		.10	1.10	.21	.12	.31			
29	182	b	b			33	40				.11	1.25	.14	.18	.70			
30	149	b	b			39	40				0	.16	0	0	.05			

b Thermometer broken. * Snow.

GRAEFENBURG HYDROPHYSICAL RECORDS — (*Concluded*).

Month of December, 1911.

DAY.	Total wind movement, 24 hours.	Mean vapor pressure.	Mean air temperature.	Mean water temperature.	Mean of maximum and minimum thermometers.	Mean Soil Temperature. 2 inches depth.	Mean Soil Temperature. 24 inches depth.	Mean barometer. *Inches.*	Precipitation. *Inches.*	Evaporation from water. *Inches.*	Percolation Through Lysimeter. *Inches.* 1 Clay, long grass.	2 Clay, short grass.	3 Clay and loam, bare.	4 Sand, long grass.	5 Sand, bare.	Accumulated Snow on Ground in Woods. *Inches.* Snow.	Water.	Depth to water in well. *Feet.*
(1)	(2)	(3)*b*	(4)*b*	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1	221					36	40				0	0	0	0	0			
2	122					32	40		.05*		.01	.04	0	0	.01			
3	42					30	40		.07*		0	0	.01	0	.01			
4	58					31	40				.08	.02	0	0	.01			7.9
5	275					32	40				.11	0	.17	0	0			
6	201					32	38				.08	.05	.28	.11	.02			
7	147					36	38				.17	.02	0	.17	0			
8	135					33	38		.17		.20	0	.12	0	.01			
9	135					34	38		.06		0	.11	0	.05	.02			
10	460					36	38				.03	0	.01	.08	.03			
11	123					38	38		.22		0	.76	0	.03	1.02			8.6
12	122					42	38		.25		.48	2.18	.49	.56	3.10			
13	65					34	40		.07		.09	1.70	.09	.01	1.40			
14	156					32	40		.22		.09	1.81	.12	.31	1.60			
15	110					33	40		.05		.01	1.40	1.20	1.30	1.40			
16	99					32	40		.32		.56	3.40	.52	.37	3.47			
17	216					34	40		.05*		.47	2.70	.16	.22	3.38			
18	177					34	40		.04*		.09	1.40	.05	.04	3.40			8.7
19	122					32	39				.02	1.30	.03	.05	2.74			
20	130					30	39				.02	2.60	.02	0	.04			
21	79					30	38		.03*		.04	1.30	.07	0	.02			
22	167					34	38		.70		.71	1.20	.13	.03	2.74			
23	154					32	38				.42	1.30	.01	.19	2.21			
24	265					32	38				.36	1.26	.31	.45	2.40			
25	105					32	37				.02	2.60	.08	.06	1.90			7.9
26	176					32	37		.25		.05	1.60	.02	.03	2.06			
27	358					32	37		.06*		.29	2.20	.26	.23	2.70			
28	444					32	37		.08*		.09	2.90	.02	0	1.40			
29	198					31	37				.01	.20	.01	0	.10			
30	251					30	37		.02*		.02	.01	.01	0	.01			
31	254					30	37		.15*		0	0	0	0	0			

b Thermometer broken. * Snow.

NINE-MILE CREEK.

NINE-MILE CREEK AT POWELL'S BRIDGE, NEAR STITTVILLE, N. Y.

A gaging station was established at Powell's bridge, one mile below the village of Stittville, November 4, 1905, by C. A. Poole. Observations of the stage of the stream are taken each morning and afternoon by Mrs. Raymer Powell, from a weight-and-chain gage attached to the bottom chord on the downstream side of the bridge.

Nine-Mile creek drains a large portion of the territory on the north side of the Mohawk river between Utica and Rome, emptying into the latter stream near Oriskany. Its channel will be improved and used as a feeder for the diversion of water from West Canada creek to the summit level of the improved Erie canal, according to present plans. The drainage area above the station is 62.6 square miles.

A gaging station was maintained at this point by the U. S. Deep Waterways Commission during their survey in 1898. At that time there was a dam about 200 feet below the bridge, which has since been destroyed, leaving the flow unimpeded. The channel is of rock, of uniform cross-section and straight for several hundred feet each way from the bridge, and the conditions are favorable for current-meter discharge measurements, except in times of very low water. Measurements are made from the upstream side of the bridge.

Owing to the sluggish velocity at low stages the record for very low-water conditions is considered to be roughly approximate only.

Current-meter Discharge Measurements of Nine-Mile Creek at Powell's Bridge, near Stittville, N. Y.

DATE.	Hydrographer.	Gage Reading.			Meter No.	Lateral interval.	Submergence depth.	Total area.	Total width.	Computed discharge.
		Beginning.	Ending.	Mean.						
1911.						Feet.		Sq. ft.	Feet.	Sec.-ft.
June 9	Barrett & Robbins....	2.32	2.30	2.31	462	5	0.6	61.1	75	42.8
July 20	R. N. Barrett.........	2.17	2.17	2.17	462	2	0.6	45.7	71	20.1

Mean Daily Discharge, Second-feet, of Nine-Mile Creek at Powell's Bridge, near Stittville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	*2,524	170	132	524	56	56	46	19	37	*56	338	556
2.....	2,730	144	120	*229	75	65	*37	19	37	56	132	434
3.....	2,834	120	120	120	86	75	37	19	*37	86	120	*299
4.....	2,423	108	97	213	86	*86	37	37	37	97	144	132
5.....	524	*108	*97	492	56	86	19	37	37	108	*144	108
6.....	318	108	97	1,201	56	872	75	*37	132	299	157	97
7.....	262	132	97	1,201	*37	338	19	37	132	132	590	97
8.....	*170	132	170	1,090	56	65	19	37	144	*144	462	120
9.....	144	144	198	*556	56	56	*37	37	785	120	170	338
10.....	170	120	198	492	56	56	19	37	*638	86	184	*408
11.....	170	120	262	37	56	*86	37	37	318	56	245	462
12.....	198	*97	*280	56	56	338	37	37	184	65	*360	556
13.....	198	86	318	408	56	338	37	*37	132	132	299	2,117
14.....	338	75	408	2,624	*56	56	37	37	120	132	262	1,090
15.....	*299	75	524	299	37	65	37	37	144	*65	262	434
16.....	97	97	157	*46	37	86	*56	37	144	65	299	2,219
17.....	75	120	120	37	37	65	86	37	*120	144	299	*1,304
18.....	56	120	120	56	37	*56	108	19	97	108	299	462
19.....	56	*132	*144	56	37	37	37	19	86	556	*299	360
20.....	56	132	157	37	37	37	37	*19	86	492	384	299
21.....	157	144	108	86	*46	37	28	19	65	434	262	144
22.....	*170	318	97	108	37	46	19	19	56	*65	280	157
23.....	198	360	120	*108	46	65	*19	19	37	120	318	144
24.....	198	360	120	97	56	86	37	19	*46	97	360	*157
25.....	198	360	132	120	56	*97	37	37	37	97	408	157
26.....	262	*384	*184	108	56	132	28	37	37	75	*408	157
27.....	360	384	360	97	56	157	19	*37	56	86	318	132
28.....	338	384	360	75	*56	280	28	56	65	65	360	108
29.....	*384	......	492	56	37	97	19	65	75	*56	590	97
30.....	360	......	492	*56	37	56	*19	56	86	46	638	65
31.....	157	......	556	......	75	......	19	56	......	86	......	*56
Mean...	530	180	221	356	52	132	36	34	134	136	313	428

* Sunday.

Monthly Discharge of Nine-Mile Creek at Powell's Bridge, near Stittville, N. Y.
[Drainage area, 59 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	2,834	56	530	8.98	10.35
February	384	75	180	3.05	3.18
March	556	97	221	3.75	4.32
April	2,624	37	356	6.03	6.73
May	86	37	52	0.881	1.02
June	872	37	132	2.24	2.50
July	108	19	36	0.610	0.703
August	65	19	34	0.576	0.664
September	785	37	134	2.27	2.53
October	556	46	136	2.31	2.66
November	638	120	313	5.31	5.92
December	2,219	56	428	7.25	8.36

PRECIPITATION RECORDS.

Rain gages have been established by this Department at several places on the Mohawk drainage area. Precipitation records have been kept as follows:

Daily Precipitation, in Inches, at Tribes Hill, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	0.20				0.60					0.80		
2	0.10								1.10	0.10		0.05
3	0.20											
4		0.20								0.20	0.20	
5				0.50		1.50					0.20	
6						0.20		0.20	0.60	0.40		
7		0.80				0.30					0.30	
8												0.20
9	0.20			0.40					1.60			
10			0.20			0.10						
11						0.40		0.10				
12						0.40					0.20	
13												
14		0.20		0.80								0.20
15			0.30					0.20	0.20		0.40	
16						0.10						0.60
17								0.10				
18			0.20								0.30	
19					0.10			0.20				
20			0.50				0.10			2.00		
21										0.20		
22		0.22	0.20						0.60			0.20
23										0.80		
24					0.40		0.20	0.70				
25						0.10						
26		0.10									0.20	
27	0.70		0.60							0.20		
28								1.50				
29	0.20						0.20		0.80			
30			0.60				0.40					
31					0.40					0.60		0.10
Total	1.60	1.40	2.60	1.70	1.50	3.10	0.90	3.00	4.90	5.30	1.80	1.35

Daily Precipitation, in Inches, at Utica, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1				0.04	0.43	0.78					0.60	
2	0.56	0.10		0.03						0.70		0.10
3		0.04		0.02	0.17				1.47		0.15	
4	0.35	0.41	0.02		0.12			0.08				0.16
5				0.60		0.45		0.20				
6			0.27	0.15		1.12			0.70			
7		0.95				0.20				0.54	0.12	
8		0.07							1.10		0.15	
9	0.03	0.08		0.11				0.30	1.00			0.49
10	0.09	0.09	0.38						0.10		0.13	0.03
11		0.06	0.01			0.17		0.06	0.20	0.47		
12	0.19	0.04						0.09				0.25
13		0.08	0.09			1.49					0.50	0.70
14		0.22										0.07
15	0.13		0.04			0.09			0.05		0.14	0.27
16	0.02		0.05	0.47					0.20		0.15	0.12
17	0.03		0.01	0.10		0.07	0.64					0.55
18		0.39	0.15				0.10	0.10		0.50	0.74	
19		0.04	0.03							0.15	0.11	
20	0.02	0.01	0.30		0.27	0.17		0.30			0.18	0.09
21		0.12	0.10									
22	0.17		0.08						0.38			
23		0.09	0.20							0.95	0.30	1.10
24		0.04			0.14							
25		0.01			0.08	0.64		0.45				
26						0.18	0.14	0.25	0.50			
27	0.16	0.04	0.24			0.22				0.13		0.34
28	0.60		0.61			0.61				0.10		0.24
29	0.05		0.05					1.85				0.34
30	0.06		0.12				0.40		0.40			
31			0.11							0.15		

Daily Precipitation, in Inches, at Savage Reservoir, near Utica, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1			*0.01	*0.08	0.05	1.06				0.48	0.38	
2	0.19	*0.04	*0.01	*0.04	0.55							
3	*0.02	*0.06	*0.02		*0.05	0.01			1.36	0.46	*0.02	*0.06
4	*0.28	*0.26			*0.03	0.02		0.07		0.30		*0.10
5		*0.15	*0.01	0.51		0.52		0.86				
6	*0.03		*0.12	0.03		1.32			0.80	0.44		
7		*0.15	*0.01	0.09				0.05	0.04		0.31	
8	*0.01	*0.03				0.15			1.06		0.15	
9	*0.27	*0.13		*0.20				0.31	1.32		0.08	0.23
10	*0.06	*0.01	0.33	*0.03					0.37	0.06	0.02	0.04
11		*0.05	*0.05		0.01	0.20		0.02	0.03	0.05	0.03	
12	0.12	*0.03	0.05			0.06		0.16	0.27			0.23
13	0.01	*0.10	0.06			1.03					0.51	0.59
14	0.12	*0.09				0.19						0.06
15	0.07	*0.06	*0.05	0.30		0.04			0.05		*0.20	*0.24
16	*0.04		*0.03	0.03	0.03	0.02	0.33	0.48	0.41		*0.07	0.09
17	*0.01		*0.02	0.02	0.03	0.43	0.42	0.12		0.35	*0.03	0.52
18		0.35	*0.12	0.10	0.01					0.21	0.61	*0.04
19		*0.03		*0.02	0.01		0.26	0.53		0.12	0.07	*0.04
20	*0.01		*0.28		0.45	0.04		0.02		0.05	*0.02	
21	*0.01	*0.07	0.19			0.01	0.13			0.14	*0.09	
22	0.03	*0.03	*0.04	0.03					0.41	1.09	*0.01	0.04
23		*0.02	0.23	0.15		0.44	0.21					1.05
24		*0.01	*0.02		1.76	0.12	0.02				0.30	
25		*0.01			0.43	0.10	0.03	0.39	0.12		0.04	
26						0.29	0.09	0.36	0.22	0.08	*0.02	
27	0.12	0.05	0.35			0.61				0.19	*0.05	0.28
28	0.55	*0.01	0.49						0.11			*0.08
29	*0.32		*0.05				0.26	1.86	0.10		0.07	*0.09
30	0.24		*0.16		0.02		0.15		1.47		*0.02	
31	*0.03		*0.14							0.32		*0.04

* Snow.

Daily Precipitation, in Inches, at Graefenburg, near Utica, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1			*0.01	*0.07	0.03	0.91					0.37	
2	0.16	*0.04		*0.04	0.90					0.51		
3	0.02	*0.04	*0.01		*0.04				0.75		*0.02	*0.05
4	*0.24	*0.35			*0.02			0.05		0.30		*0.07
5		*0.22	*0.01	0.60		0.50		0.33		0.18		
6	*0.02		*0.20	0.02		1.35			0.71			
7		*0.22						0.21	0.02	0.45	0.32	
8		*0.02				0.10			1.28		0.12	
9	*0.20	*0.13		*0.19				0.29	0.59		0.07	0.17
10	*0.10		*0.29	*0.02					0.51		0.02	0.06
11		*0.03	*0.04			0.15			0.02			
12	*0.12	*0.03				0.08		0.16	0.10	0.09		0.22
13		*0.11	0.05			0.68					0.40	0.25
14	0.14	*0.08		0.01		0.12						0.07
15	0.05	*0.27	*0.06	0.15							*0.05	0.22
16	*0.06		*0.02		0.03			0.36	0.25		*0.06	0.05
17				*0.02	0.02	0.38	0.20	0.08			*0.04	0.32
18		*0.04	*0.10		0.01		0.30			0.42	0.50	*0.05
19		*0.03						0.35		0.23	0.08	*0.04
20	*0.01		*0.33	0.01	0.74	0.02	0.21			0.07	*0.02	
21	*0.01	*0.09	*0.15							0.03	*0.08	
22	*0.02	*0.02		*0.02					0.35	0.05		*0.03
23		*0.07	*0.21	0.11		0.30				0.02		0.70
24		*0.02	*0.02		1.70		0.17				0.19	
25		*0.01			0.14		0.03	0.29	0.06		*0.03	
26						0.12		0.43	0.15		*0.02	
27	0.05	0.04	*0.30			0.37	0.09			0.02	*0.02	0.25
28	0.55		*0.43			0.11			0.08	0.15		*0.06
29			*0.04					1.63	0.11		0.10	*0.08
30	0.06		*0.13		0.02		0.27		0.58			
31	*0.06		*0.28							0.30		*0.02

* Snow.

Daily Precipitation, in Inches, at Deerfield Reservoir, near Utica, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1				*T	0.11	0.88					0.53	
2	0.62	*0.12	T	0.04	0.61	0.02				0.40		
3	T	*0.05	T		*0.01				1.03		*0.03	*0.07
4	*0.18	*0.17	T		T	T				0.73		T
5		*0.18		0.50		0.90		0. 1		0.13		
6	*0.02		*0.09	0.05		1.04			0.55			
7		*0. 8		0.12		T			0.01	0.47	0.14	
8	*0.01					0.06			1.09		0.13	
9	*0.11	*0.07		*0.20				0.29	1.07			0.33
10	*0.05	*0.01	*0.30						0.20		0.03	0.24
11		*0.04	T		0.02	0.11	0.02	0.10		0.06	0.24	
12	0.15	*0.04	T			0.08	0.02	T	0.26	0.01		0.25
13	T	*0.04	.02			1.19			T		*0.43	0.70
14	*0.05	*0.02		0.10		.13						
15	*0.12	*0.07	*0.03	0.42		0.03			0.05		*0.24	0.21
16	*0.01		*0.02	T	T			0.16	0.45		*0.03	0.07
17	T		T	T	T	0.37	0.57	0.21			T	0.53
18		0.37	*0.17				0.49			0.52	0.84	*0.01
19		*0.03	*0.07		T			0.39		0.12	*0.05	*0.01
20	T		*0.09		0.05	0.10	0.18	0.02		0.03	*0.03	
21	*0.05	0.05	*0.10			0.83				0.02	*0.09	
22	*0.08	T	*0.05	T			0.05		0.41	0.07		*0.01
23		T	0.22	0.08		0.31				0.84		1.20
24		*0.02			1.02	0.02	0.29	0.06		0.01	*0.46	
25					0.74	0.07	0.04	0.23	0.02	0.02	*0.03	
26					T	0.19		0.34	0.12		*0.04	
27	0.16	0.02	0.21			0.31	T			0.07	*0. 8	0.36
28	0.5	T	0.62			0.50		0.01	0.09	0.12		*0.14
29	*0.01		*0.01					1.84	0.06			*0.04
30	*0.21		*0.14				0.51		0.37			
31	T		*0.05		T					0.28		*0.02

* Snow. T means trace.

Daily Precipitation, in Inches, at Trenton Falls, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	0.38		0.07	T	0.08	1.43			T	T	0.92	T
2	0.12	*0.29	T	0.04	0.72	T				0.31		
3	*0.19		T	T	T				0.47		0.11	*0.10
4	*T	*0.64			0.04			0.10		0.14		
5		T	T	0.67		1.38				1.00		
6	*T		0.15	0.06		1.32			1.10			
7	*T	*0.50	T	T						0.73	0.21	
8	*T					T			0.63		0.12	
9	*0.29	*0.16		0.20				1.20	0.50		0. 6	0.35
10	*0.03	*T	0.32						0.07			0.17
11		*0.05	T		T	0.14					0.16	
12	0.19					0.05	T	T	0.47			0.29
13		T				0.70					0.53	0.41
14	0.09	0.16		0.21		0.41						T
15	0.13		0.09	0.72		T					0.55	*0.29
16	*T		0.02	T	T			0.31	0.42		0.15	T
17			0.02	T		0.09	1.19					0.42
18		0.33	0.35	T	T		0.59	0.18		0.73	0.92	0.02
19		*T	T	0.09				0.29		0.15	0.10	
20	*T		0.53		.45		0.18	T		0. 7	0.09	
21	*0.10	*0.15	0.12							0.05	0.15	
22	0.10	*0.02	0.09			T			0.45	0.05		T
23		*T	0.20	0.08		0.29		T		0.93		0.82
24		*0.05			0.78						0.43	T
25		*T			0.62		0.40	T			0.05	T
26						T	0.20	0.67	0.07		0.15	
27	0.11		0.36			0.63					0.14	0.27
28	0.31	T	0.28			0.89			.19			0.20
29			T					1.50			0.17	*0.08
30			T				0.41		0.20			
31	T		0.25									
Total	2.04	2.35	2.85	2.07	2.69	7.33	2.97	4.25	4.57	4.16	5.01	3.42

T means trace.

Daily Precipitation, in Inches, at Twin Rock Bridge, near Grant, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1			*0.04		0.34	2.00					0.15	
2	0.50	*0.30			0.64					0.51		
3	0.20							0.32	0.33		*0.05	*0.17
4	*0.19	*0.40						0.21		0.65		
5				0.85		0.50				0.46		
6			*0.12	0.05		1.75			1.12			
7		*0.42		0.38					0.01	0.91	0.38	
8	*0.14					0.15			0.48		0.47	
9	*0.18	*0.09		*0.23				1.59	0.60			0.37
10	*0.15		*0.21						0.16			0.08
11		*0.18						0.10			0.38	
12	0.18					0.15			0.52		*0.04	0.23
13						0.78			0.05		0.85	0.87
14	0.09			0.24		0.84						0.02
15			*0.06	0.55		0.02					*0.45	0.20
16					0.05			0.25	0.53		*0.32	
17							0.56	0.22				0.68
18		0.38	*0.34				1.27			1.00	1.06	0.05
19				0.13	0.38			0.34		0.22	*0.30	
20			*0.35		0.77		0.13	0.05		0.05	*0.22	
21		*0.10	*0.21							0.10	*0.09	
22	0.28								0.42	0.15		
23			0.32	0.06		0.34				1.06	*0.37	1.60
24		*0.16			0.79		0.46					
25					0.25			0.20				
26								0.36			*0.11	
27	0.09		0.64				0.14			0.15	*0.16	0.41
28	0.50		0.60			0.76			0.23	0.11		*0.55
29								1.27			0.37	
30	*0.38		*0.18				0.15		0.59			
31			*0.18							0.16		*0.08

* Snow.

Daily Precipitation, in Inches, at Gray, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1			0.02		0.33	1.33			0.03		0.63	
2	0.77	0.10	0.03		0.62	0.08				0.50		
3	0.30	0.09	0.02		0.02			0.38	0.94		0.04	0.09
4	0.24	0.22								0.62		
5		0.25		0.56		0.05				0.62		
6			0.13	0.17		2.00			1.59			
7	0.04	0.09		0.29		0.02				0.97	0.46	
8	0.06					0.06			0.71		0.50	
9	0.35			0.21				1.45	0.73			0.32
10	0.04		0.34						0.30		0.07	0.17
11		0.15				0.05		0.06			0.28	
12	0.21	0.04				0.13			0.45	0.02		0.43
13			0.12			0.65			0.06		0.58	0.70
14	0.09	0.08		0.16		0.08						
15	0.12	0.03		0.10		0.02			0.05		0.48	0.24
16			0.06			0.54		0.34	0.34		0.13	0.13
17						0.12	0.08	0.14				0.58
18		0.34	0.35				0.06			0.57	1.07	
19	0.06		0.11		0.43			0.37		0.34	0.24	
20	0.08		0.27				0.21	0.05		0.26	0.08	
21	0.15	0.11	0.18							0.13	0.13	
22				0.12					0.64	0.11		
23			0.39		1.77	0.14				1.02		1.58
24		0.04			0.41		0.27			0.01	0.46	0.04
25					0.03	0.05	0.29	0.18				
26						0.17	0.01	0.55	0.10		0.15	
27	0.15	0.09	0.69			0.67	0.04	0.01			0.17	0.35
28	0.48		0.59			0.07	0.06		0.15	0.23		0.13
29			0.05					1.89	0.04		0.26	
30	0.44		0.10				0.06		0.51			
31			0.09							0.15		0.18

Daily Precipitation, in Inches, at Hoffmeister, N. Y.

DAY.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.
1911.												
1	0.90		*0.19	*0.08	1.11	T			0.12	0.55		
2		*0.65		*T	*T			0.03	0.75		*0.07	*0.09
3	*0.44		*T					T			*T	
4		*0.95		0.90						0.60		
5						1.40			1.30	T		
6	*0.18		*0.11	0.15				0.40		0.88	1.00	
7		*0.92				0.13			T			
8	*T							0.70			*T	
9	*0.56			*0.15					1.15			0.30
10			*0.21			T					0.36	
11	T	*0.41			T	0.34	T	0.17		T		
12			T			0.40			0.56		*T	0.90
13	0.60	*T				0.61	T					
14				0.47		T					*1.26	*0.30
15	*T		*0.12		T	0.12	0.40	0.10	0.43			
16						0.20	0.52	T				0.47
17		0.43		*T			T				*T	
18		*T	*0.45					0.70		1.01	*1.37	*T
19	*T		*1.15		0.41			T		T		
20		*0.13				0.20						
21	0.21	*T	*T	*0.07					0.35	1.21		
22		*0.11	0.69		1.00	T						1.43
23	*T	*T	*T		1.20			T				
24					0.10		0.72			0.20	*0.50	
25	*0.10				T	0.25	T	0.53	0.04			
26	0.89	0.27				T	0.25				*0.17	
27		*T	1.20			0.60			0.25			*0.55
28	*T		*0.76					2.35			0.50	*T
29			*T				T		0.35			
30	*0.57		*0.74	T			0.20				*0.04	
31					1.42		1.60			0.46		*0.38

* Snow. T means trace.

UPPER HUDSON RIVER DRAINAGE BASIN.

DESCRIPTION.

Upper Hudson river comprises the drainage basin above tide-water influence at Troy and also above the mouth of Mohawk river at Waterford.

The head-water region is mountainous in character, in general heavily wooded, and dotted with numerous lakes and ponds. The rocks, belonging to the oldest formation and mainly granite, are either bare or covered with only a layer of spruce duff, humus and forest litter. The river emerges from the mountain region a few miles west of Glens Falls, and thence to Troy the topography is moderately rolling and the surface soil is chiefly sand.

The fall in the upper portion of the course is very rapid, amounting to about 64 feet per mile from Lake Tear-of-the-Clouds to North creek, a distance of about 52 miles. From the mouth of North creek to the mouth of the Sacandaga the descent is nearly 14 feet per mile, distributed among rapids which diminish in frequency as the Sacandaga is approached. In the succeeding 26 miles to Fort Edward the river descends 418 feet more, but of this, 175 feet is comprised within the three abrupt pitches at Palmer, Glens and Bakers falls, while most of the remainder occurs in the rapids between Jessups Landing and the oxbow above Glens Falls. Between Glens Falls and Troy nearly the entire fall of the river is utilized for the development of water-power.

The flow of the upper Hudson is controlled to some extent during the dry season by the use of Indian lake storage reservoir, and the facilities for storage works in this part of the basin are unsurpassed. The entire region is dotted with ponds and lakes, many of them of large size and fed from extensive drainage areas. Saratoga lake serves as a regulator of Fish creek, and there is a small reservoir at the head waters of the Hoosic.

UPPER HUDSON RIVER WATER-SURFACE ELEVATION RECORDS.

The following tables give records of the mean daily elevation of water-surface for 1911. The elevations are referred to Barge canal datum.

The tables of elevations of water-surface are arranged in order, proceeding upstream from the State dam at Troy to Glens Falls.

An accompanying table gives details as to the types of gages used, the datum of each and the manner in which readings are taken.

Water-surface Elevation Gages Maintained on the Hudson River and Tributaries During the Year 1911.

LOCATION.	Date established.	Observer.	Elevation of zero mark (B. C. datum).	Type of gage.	Subdivision of gage.	Readings taken to
Hudson river.						
Troy, below dam	Jan. 19, 1903	John B. Mackey	—0.09	Staff	1/10 Foot	1/10 Foot
Troy, above dam	" " "	" "	9.27	"	1/10 "	1/10 "
Mechanicville, below Adirondack E. P. Corp.'s dam	Aug. 18, 1905	H. C. Tinker	29.00	"	1/10 "	1/10 "
Mechanicville, above Adirondack E. P. Corp.'s dam	" " "	"	43.00	"	1/10 "	1/10 "
Mechanicville, at Toll bridge	Aug. 16, 1905	Wm. E. Downing	48.77	"	1/10 "	1/10 "
Mechanicville, at B. & M. R. R. bridge	Aug. 15, 1905	Wm. H. Sigsworth	66.50	"	1/10 "	1/10 "
Stillwater, below dam	July 15, 1909	E. G. Hayner	74.73	"	1/10 "	1/10 "
Stillwater, at highway bridge	Aug. 1, 1908	"	81.29	"	1/10 "	1/10 "
Schuylerville, at Toll bridge	Aug. 14, 1905	Ed. Durkin	81.50	"	1/10 "	1/10 "
Liberty Mill, at Free bridge	Oct. 23, 1905	Wm. B. Dunston	83.12	Chain	1/10 "	1/10 "
Northumberland, above dam	April 11, 1904	P. F. Gleason	100.58	"	1/10 "	1/10 "
Fort Miller, below dam	May 1, 1904	Leon C. Brazier	100.00	Staff	1/10 "	1/10 "
Fort Miller, above dam	April 11, 1904	" "	113.70	"	1/10 "	1/10 "
Crocker's reef, above dam	" " "	J. H. Donnelly, Jr.	114.86	"	1/10 "	1/10 "
Fort Edward, at Bridge street	....	Benj. F. Thebo	117.87	"	1/10 "	1/10 "
Fort Edward, below I. P. Co.'s dam	1906	F. E. Chapman	121.47	"	Inch	Inch
Fort Edward, above I. P. Co.'s dam	"	"	139.83	"	"	"
Glens Falls	Mar. 9, 1905	A. B. Fisher	277.97	"	1/10 Foot	1/10 Foot
Corinth	Oct. 1, 1906	E. H. Bowker	*	"	1/10 "	1/10 "
Hoosic river — Hoosic Falls	April 3, 1904	S. L. Cluett	*	"	1/10 "	1/10 "
Sacandaga river — Northville	Feb. —, 1904	P. C. Pickard	738.51*a*	Chain	1/10 "	1/10 "
Lake Champlain — Whitehall	Jan. 22, 1905	Karl Herzog	93.00	Staff	1/10	1/10

* Arbitrary datum. *a* U. S. Weather Bureau datum.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Hudson River below State Dam at Troy, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	4.96	5.56	5.86	13.11	10.41	3.36	2.31	1.66	3.31	2.16	4.31	5.16
2.....	5.91	5.26	5.41	6.61	10.86	2.51	1.71	2.06	3.06	2.51	4.26	5.56
3.....	8.01	5.01	4.71	5.66	11.96	2.76	1.66	2.51	2.86	3.56	4.36	5.21
4.....	10.66	5.01	4.96	5.11	11.16	3.51	2.21	3.06	3.16	4.51	4.41	5.46
5.....	10.26	4.66	4.76	6.01	9.56	3.71	2.66	3.21	3.26	4.26	4.11	5.56
6.....	8.61	4.66	5.06	10.16	8.41	3.91	3.21	3.31	4.31	4.91	4.31	5.41
7.....	7.66	4.51	5.41	13.41	6.86	5.71	2.81	3.66	4.16	5.71	5.11	5.51
8.....	7.36	4.66	4.91	13.16	6.51	5.86	3.61	4.41	4.96	6.01	5.01	5.16
9.....	7.71	4.31	4.91	12.31	6.11	6.06	4.01	4.71	5.26	6.16	4.86	5.26
10.....	6.36	4.41	5.06	11.56	6.36	5.86	3.81	4.26	5.76	5.76	5.51	5.01
11.....	5.51	4.06	5.61	10.61	6.26	5.41	4.26	4.11	6.16	5.31	5.41	4.76
12.....	5.91	4.31	4.56	10.46	6.36	5.91	4.16	3.61	5.51	3.41	5.91	5.06
13.....	5.76	4.31	4.61	10.21	6.66	6.56	3.71	3.21	3.71	3.51	5.91	5.56
14.....	5.91	4.21	5.41	10.51	4.96	7.66	3.46	2.96	3.31	3.76	5.66	6.11
15.....	5.41	4.11	6.66	11.36	4.76	7.56	3.41	2.91	3.46	2.81	5.96	8.11
16.....	5.46	4.01	5.91	12.96	4.51	7.06	2.96	2.31	3.36	3.31	5.86	8.91
17.....	4.71	3.81	5.21	12.81	4.41	6.56	2.76	1.91	2.91	3.66	5.41	9.16
18.....	4.21	3.71	5.26	11.46	4.11	4.81	2.06	1.91	3.11	4.91	5.36	9.56
19.....	4.01	3.61	3.91	10.21	4.41	4.46	1.96	1.71	3.41	6.16	5.51	8.11
20.....	4.26	3.96	3.81	9.41	4.61	4.01	2.26	2.51	4.41	9.21	8.16	7.26
21.....	4.36	4.21	3.71	9.31	3.01	3.61	2.81	3.06	4.16	8.71	8.16	6.31
22.....	4.51	4.46	4.16	9.11	3.06	3.71	3.01	3.76	4.51	7.46	7.41	6.01
23.....	5.21	4.16	4.71	9.11	3.31	3.56	3.36	4.01	4.66	7.31	7.51	6.66
24.....	5.21	4.01	5.41	8.76	4.26	3.61	4.26	3.96	4.76	9.36	6.91	10.66
25.....	4.96	4.01	6.01	8.41	4.91	4.41	4.66	3.76	3.91	8.16	5.86	10.01
26.....	4.41	3.86	4.81	8.91	5.21	4.96	4.26	4.01	3.26	6.91	5.21	9.31
27.....	4.06	4.36	6.91	9.41	5.51	5.16	3.71	3.11	3.26	5.91	4.81	8.31
28.....	6.36	3.91	12.71	9.81	5.46	4.41	3.46	3.21	2.31	5.31	4.51	8.51
29.....	7.31	......	13.41	10.11	6.51	3.46	3.06	2.41	2.41	4.81	4.81	6.76
30.....	7.01	......	13.61	10.16	5.56	2.91	3.86	1.76	2.16	4.31	4.71	5.01
31.....	6.31	......	13.46	......	3.86	......	3.81	2.41	......	3.91	......	5.16

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Hudson River above State Dam at Troy, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	15.47	15.27	15.57	17.42	17.12	13.22	13.07	13.72	14.82	13.92	14.27	15.27
2.....	15.62	15.12	15.37	15.57	17.17	13.22	13.42	13.82	14.72	14.02	14.72	14.97
3.....	16.57	14.97	15.17	15.32	17.72	13.17	13.42	13.02	14.82	14.47	14.52	14.92
4.....	17.87	15.02	15.07	14.87	17.52	13.92	13.42	14.47	14.87	14.37	14.47	14.97
5.....	16.92	15.17	14.97	15.22	16.57	13.67	13.07	13.62	14.52	14.32	14.42	14.72
6.....	16.37	15.07	15.02	16.87	15.87	13.52	13.02	14.12	14.17	14.87	14.37	14.22
7.....	15.72	14.87	15.17	18.57	15.42	14.57	13.72	13.92	14.37	15.37	14.27	14.22
8.....	15.97	14.92	15.07	18.17	15.32	14.47	14.32	13.62	14.92	15.52	14.57	14.07
9.....	15.87	14.87	15.12	17.72	14.87	14.37	14.67	13.27	14.97	15.52	14.77	14.12
10.....	15.47	14.82	15.17	17.47	15.07	14.32	14.47	13.77	15.82	15.17	14.97	14.12
11.....	15.22	14.72	15.12	17.02	14.77	14.12	14.27	13.77	16.02	15.07	14.87	14.22
12.....	15.17	14.97	14.87	16.62	14.62	14.02	13.92	14.07	15.52	14.52	15.02	14.57
13.....	15.02	14.87	14.92	16.72	14.47	14.47	14.12	14.57	15.67	14.32	15.17	14.87
14.....	14.67	14.57	15.22	17.02	14.17	15.52	13.67	14.22	15.12	14.27	15.27	15.27
15.....	15.57	14.27	16.22	17.57	13.77	15.57	14.17	13.52	15.17	13.67	15.12	16.32
16.....	15.37	14.37	16.27	18.37	13.52	15.07	14.47	13.42	15.07	13.72	14.97	16.52
17.....	15.07	14.57	16.07	18.07	13.07	14.77	14.57	13.47	14.92	13.62	14.77	16.77
18.....	15.02	14.92	16.12	17.67	13.07	14.52	14.62	14.52	15.02	13.72	14.67	16.72
19.....	14.87	15.02	15.67	16.87	13.02	14.32	14.42	14.52	14.72	15.02	15.42	15.87
20.....	14.72	14.97	15.57	16.47	12.87	13.97	13.82	14.62	14.97	16.22	16.12	15.47
21.....	15.07	15.02	15.52	16.37	13.82	13.87	14.62	14.17	14.12	16.27	15.77	14.92
22.....	15.22	14.92	15.37	16.22	13.97	13.67	14.57	13.57	13.77	15.77	15.52	14.62
23.....	15.47	14.92	15.17	16.32	13.87	13.62	14.72	13.67	13.57	15.92	15.17	15.22
24.....	15.77	14.82	15.82	16.07	13.42	13.57	14.62	13.37	13.42	16.57	14.82	17.57
25.....	15.77	14.72	15.27	15.77	13.97	13.62	14.22	13.47	13.52	16.02	14.87	17.12
26.....	14.32	14.77	14.97	16.02	14.22	13.42	14.17	13.57	13.42	15.47	14.92	16.67
27.....	14.42	14.62	15.57	16.37	14.07	13.37	14.07	14.37	13.37	15.07	14.77	16.27
28.....	15.77	14.57	18.22	16.57	13.97	13.17	13.47	14.37	13.52	14.92	14.37	16.22
29.....	16.42	......	17.52	16.77	14.12	13.22	13.02	13.87	13.77	14.72	14.62	15.52
30.....	14.62	......	17.72	16.37	13.62	13.27	13.07	14.37	13.77	14.52	15.02	15.82
31.....	15.52	......	17.42	......	13.42	......	13.02	14.42	......	14.27	......	15.07

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Hudson River below Dam of Adirondack Electric Power Corporation, near Mechanicville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	31.65	31.95	32.25	32.10	34.95	31.00	30.90	31.15	31.80	31.35	32.35	33.85
2.....	32.20	31.65	31.55	31.60	35.15	31.45	30.50	30.95	31.15	31.10	32.35	33.55
3.....	34.15	31.85	31.60	31.80	35.60	31.05	30.70	31.00	31.15	32.70	32.40	33.00
4.....	34.35	31.30	31.50	31.50	35.35	30.80	30.65	31.10	31.45	32.30	32.25	33.40
5.....	33.70	31.45	30.85	31.70	34.30	30.90	30.45	31.15	31.30	32.80	32.35	32.70
6.....	33.00	31.50	31.50	33.20	33.40	31.05	30.90	30.90	31.50	32.95	32.90	32.80
7.....	32.70	32.00	31.65	33.95	32.50	31.00	30.65	30.75	31.25	33.10	32.80	32.20
8.....	32.15	31.65	31.15	34.25	33.10	31.25	30.45	31.30	31.40	32.55	33.20	32.70
9.....	32.60	31.60	30.90	33.85	32.15	31.70	30.40	31.00	31.45	33.40	33.40	32.70
10.....	32.55	31.55	31.00	33.80	32.45	31.80	30.20	31.20	31.70	33.25	33.45	31.90
11.....	32.10	31.65	31.05	33.60	32.10	31.00	30.55	31.05	33.00	33.10	33.55	32.40
12.....	31.85	31.25	30.60	33.65	31.90	31.65	30.80	30.95	32.65	32.80	32.90	32.95
13.....	31.50	31.55	31.30	33.70	31.60	31.70	30.75	30.80	32.35	32.90	34.10	33.40
14.....	31.75	31.45	31.50	34.05	31.05	32.30	30.30	31.10	32.15	32.90	33.90	34.80
15.....	31.35	30.80	31.80	34.95	31.70	32.85	30.30	30.95	32.25	31.85	34.20	35.60
16.....	31.10	31.25	32.45	35.15	31.20	32.60	30.45	31.00	32.30	32.45	33.65	35.35
17.....	31.25	31.15	32.25	35.15	31.10	32.50	30.60	30.80	31.05	32.40	33.35	35.40
18.....	31.95	31.30	31.70	34.80	30.95	31.70	30.75	31.00	31.75	32.15	33.25	35.80
19.....	31.95	31.00	31.10	33.90	31.45	32.05	30.85	30.95	31.85	33.40	34.40	35.10
20.....	31.45	31.85	31.45	34.10	31.35	31.60	30.90	30.80	31.60	34.80	34.70	34.50
21.....	31.45	31.65	31.85	34.05	30.60	31.40	30.95	30.60	31.55	34.00	34.35	33.65
22.....	31.25	31.80	31.75	33.95	31.25	31.25	31.00	30.80	31.40	33.50	34.00	33.70
23.....	31.75	31.70	32.40	33.75	31.25	31.10	30.60	30.80	31.70	34.35	33.60	35.15
24.....	31.75	31.30	32.40	33.65	31.15	31.00	30.75	30.60	30.70	34.15	33.35	36.85
25.....	31.30	31.05	32.20	33.55	31.35	30.80	31.10	30.90	30.90	33.75	33.40	36.55
26.....	31.05	31.85	31.55	33.70	31.35	31.35	31.05	30.95	31.30	33.05	33.10	36.40
27.....	31.30	32.20	33.55	33.95	31.40	31.20	30.95	30.50	31.35	33.20	33.45	36.00
28.....	33.80	32.15	34.90	34.45	30.65	30.85	31.10	30.90	31.70	32.50	33.15	35.75
29.....	32.85	......	33.10	34.75	31.45	30.80	30.20	31.15	31.35	32.10	33.15	34.75
30.....	32.40	......	32.95	34.60	30.90	30.30	30.30	31.40	31.40	32.55	33.70	33.65
31.....	32.40	......	32.55	......	30.95	......	30.65	31.20	......	32.35	......	32.75

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Hudson River above Dam of Adirondack Electric Power Corporation, near Mechanicville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	49.05	47.85	48.90	49.35	51.30	48.35	48.20	48.60	48.70	48.30	47.50	49.30
2.....	49.50	48.60	49.30	49.25	51.55	48.55	48.35	48.20	48.40	48.80	47.70	49.10
3.....	50.20	49.35	49.35	49.30	51.80	48.65	48.50	48.45	48.45	48.50	47.50	49.05
4.....	50.35	49.10	49.10	49.00	51.60	48.25	47.90	48.35	48.25	48.80	47.20	49.25
5.....	49.45	49.15	49.20	49.05	51.15	48.80	48.75	48.60	48.75	48.05	47.55	48.95
6.....	49.35	49.30	49.35	50.15	50.60	48.45	47.80	48.25	48.35	48.65	48.20	48.70
7.....	49.30	49.10	49.05	50.70	50.10	48.25	48.10	48.50	48.55	48.20	47.95	49.05
8.....	49.45	49.00	49.15	50.80	50.00	48.70	48.20	48.50	48.45	47.65	48.10	49.20
9.....	49.40	49.00	49.10	50.70	48.90	48.80	48.25	48.45	48.20	48.70	48.40	49.15
10.....	49.20	49.00	49.15	50.80	49.25	48.70	48.00	48.60	48.65	48.80	48.50	48.80
11.....	48.95	48.70	49.15	50.60	49.20	49.75	48.00	48.40	49.55	48.65	48.25	49.50
12.....	48.90	49.05	49.00	50.50	49.25	48.95	48.30	48.65	48.60	48.50	48.70	49.35
13.....	49.30	49.25	49.40	50.45	48.85	48.85	48.25	48.15	47.85	48.50	49.05	49.50
14.....	48.70	49.00	49.15	50.60	48.70	49.35	48.30	48.25	48.00	48.65	48.80	50.05
15.....	49.35	48.05	49.25	51.35	48.65	49.65	48.10	48.30	47.95	47.65	49.25	50.15
16.....	49.40	49.25	49.25	51.80	48.35	49.80	48.25	48.30	48.40	48.75	48.95	50.00
17.....	49.30	49.15	48.25	51.70	48.75	49.65	48.85	48.75	47.85	48.25	48.70	50.15
18.....	49.10	49.20	47.85	51.35	48.50	49.20	48.55	48.70	49.05	48.15	48.80	50.10
19.....	49.15	48.85	47.95	51.05	48.75	49.30	48.55	48.65	48.50	48.50	49.70	49.60
20.....	49.20	49.25	48.70	50.70	48.55	48.95	48.45	48.35	47.95	50.00	49.95	49.10
21.....	49.15	49.30	48.45	50.65	48.80	48.75	47.85	48.65	48.70	49.45	49.70	49.05
22.....	49.15	49.25	48.40	50.55	49.00	48.35	48.50	48.50	48.85	49.25	49.10	49.10
23.....	49.25	49.30	49.55	50.70	48.50	48.45	48.25	48.25	48.70	49.85	48.95	49.45
24.....	49.30	49.40	49.30	50.35	48.20	48.00	47.90	48.75	48.05	49.50	49.15	50.60
25.....	49.15	49.40	48.40	50.35	48.65	49.20	48.00	48.55	48.60	49.30	49.05	50.60
26.....	49.30	49.25	48.00	50.45	48.75	48.20	48.30	48.65	48.55	48.95	49.05	50.40
27.....	49.25	49.40	49.50	50.80	48.80	47.70	48.25	48.60	48.65	48.75	49.30	50.15
28.....	49.86	49.95	50.80	51.05	48.85	47.55	48.25	48.05	48.75	48.20	49.10	49.80
29.....	48.70	......	49.80	51.30	49.15	47.85	48.50	48.65	48.60	47.95	49.15	49.35
30.....	49.25	......	50.00	51.65	48.80	47.95	48.15	48.85	48.80	47.62	59.30	49.05
31.....	48.75	......	49.75	......	48.40	......	47.85	48.75	......	47.90	......	48.45

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Hudson River at Toll Bridge, Mechanicville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	50.32	50.92	50.77	51.37	54.32	49.67	49.22	49.37	49.87	49.12	51.12	51.67
2.....	51.27	51.07	50.27	51.02	54.57	49.77	49.02	48.97	49.37	50.02	50.87	51.37
3.....	53.32	51.02	50.02	51.07	54.77	49.67	49.17	49.12	49.27	50.42	50.87	51.27
4.....	53.07	51.02	50.12	50.77	54.37	49.67	48.97	49.02	49.27	50.37	50.82	51.67
5.....	52.17	50.82	49.87	52.27	53.42	50.17	49.07	49.17	49.12	50.42	50.02	50.67
6.....	52.12	50.97	49.87	52.37	52.92	50.42	49.07	48.32	49.52	50.47	49.77	50.87
7.....	51.87	51.02	50.17	53.17	51.87	50.42	48.87	49.12	49.47	50.77	49.87	50.97
8.....	51.47	51.02	49.77	53.32	52.22	50.42	49.17	49.27	49.62	50.67	50.77	50.67
9.....	51.17	50.87	49.32	53.17	51.27	50.77	48.52	49.12	49.62	51.07	91.02	50.77
10.....	50.87	50.37	49.27	53.07	51.27	50.87	48.47	49.07	50.27	51.02	51.47	50.87
11.....	50.57	49.87	49.52	52.97	51.27	49.87	49.22	49.12	50.97	51.02	51.37	51.12
12.....	50.77	49.72	49.42	52.97	51.07	50.77	49.27	49.07	50.57	50.57	51.32	51.07
13.....	50.62	50.22	49.77	52.87	50.87	50.87	49.27	48.52	50.27	50.52	51.77	51.52
14.....	50.47	49.92	50.07	53.22	50.67	51.47	49.12	48.97	50.02	50.37	52.27	52.57
15.....	50.37	49.42	50.57	54.27	51.22	52.07	49.32	49.17	50.12	50.22	51.87	53.47
16.....	50.67	49.52	51.32	54.37	50.47	51.77	49.07	49.07	50.17	50.32	51.57	53.47
17.....	50.17	49.82	51.07	54.27	50.47	51.77	49.77	49.37	49.87	50.32	51.27	53.27
18.....	50.37	49.67	50.12	53.87	50.32	50.87	49.57	49.17	49.22	50.17	50.92	52.87
19.....	50.42	49.27	49.37	53.67	50.77	51.27	49.52	49.22	49.67	51.62	51.87	52.57
20.....	50.32	49.32	50.07	53.07	50.67	50.77	49.27	48.62	49.47	53.92	51.97	52.37
21.....	49.67	49.37	50.17	52.97	49.32	50.47	49.17	49.12	49.37	53.07	52.37	52.07
22.....	50.27	49.87	50.17	53.02	50.97	50.02	49.02	49.12	49.47	53.07	51.87	51.87
23.....	50.27	50.27	51.17	53.02	50.92	49.77	48.57	48.97	49.47	53.57	51.57	53.87
24.....	50.07	50.07	51.27	52.82	51.07	49.67	48.97	49.17	48.77	53.27	51.62	54.37
25.....	50.02	49.77	50.47	52.92	50.42	49.17	48.87	49.17	49.22	53.02	51.42	54.77
26.....	49.77	50.12	49.87	52.97	50.47	49.47	48.92	49.27	49.07	52.87	51.27	53.77
27.....	49.97	50.37	51.97	53.37	50.37	49.77	48.87	48.67	49.12	52.32	51.77	53.47
28.....	52.52	50.92	53.37	53.82	49.67	49.37	48.87	48.92	49.47	51.77	51.12	53.07
29.....	51.37	......	52.37	53.97	49.72	49.42	49.07	49.52	49.17	50.87	51.37	52.97
30.....	51.02	......	52.37	53.97	49.82	49.32	48.22	49.67	49.52	51.32	51.77	51.77
31.....	50.92	......	51.77	......	49.67	......	49.07	49.62	......	51.12	......	51.47

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Hudson River at B. & M. R. R. Bridge, Mechanicville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	67.75	67.75	68.30	69.50	71.30	68.00	67.80	67.90	68.30	*a*	68.65	69.40
2.....	68.20	67.80	68.00	69.60	71.65	67.70	67.70	67.60	67.50	68.00	68.65	69.30
3.....	69.65	67.80	68.00	69.30	71.90	68.10	68.50	67.80	67.70	68.10	68.75	69.50
4.....	70.40	67.90	67.50	69.10	71.65	68.60	68.50	67.40	68.30	68.20	68.48	69.10
5.....	69.55	68.50	67.80	69.20	61.05	68.40	*a*	67.30	67.60	68.28	69.40	68.40
6.....	68.65	68.20	67.40	70.20	70.50	67.40	66.90	*a*	67.90	68.40	68.90	68.40
7.....	68.25	68.15	67.80	71.00	70.35	68.30	*a*	67.20	67.50	68.60	68.45	68.40
8.....	69.05	68.65	67.60	71.00	70.05	68.30	*a*	67.60	67.60	69.05	68.30	67.95
9.....	68.35	68.60	66.70	71.20	69.50	68.60	*a*	66.90	68.20	68.50	68.75	67.50
10.....	67.80	68.40	67.60	70.80	69.45	68.50	64.30	67.60	68.80	68.70	69.25	67.70
11.....	68.00	68.40	67.70	70.70	69.30	68.75	65.50	67.50	69.10	68.35	68.95	68.60
12.....	67.95	68.75	68.10	70.50	69.30	68.50	67.20	67.70	68.80	67.90	69.65	68.55
13.....	68.05	68.30	67.50	70.50	69.10	68.50	66.45	65.50	68.30	68.30	69.60	69.10
14.....	68.10	68.50	68.15	70.80	69.40	69.20	67.10	67.10	68.20	67.80	69.40	70.05
15.....	68.50	67.45	68.25	71.60	68.90	69.30	67.60	67.50	67.90	*a*	69.25	70.30
16.....	67.65	68.10	69.10	72.00	68.20	69.30	67.50	67.60	67.70	67.60	69.20	70.35
17.....	67.25	68.20	68.40	71.65	68.30	69.30	66.65	67.90	67.50	67.80	68.90	70.60
18.....	67.55	68.25	68.20	71.30	67.85	69.30	67.70	67.50	67.90	68.30	69.15	70.30
19.....	67.95	68.75	68.50	71.10	68.60	68.80	*a*	67.80	67.60	69.80	70.30	70.10
20.....	68.15	68.00	68.20	70.90	68.40	68.50	67.50	*a*	67.50	70.90	69.85	69.95
21.....	68.10	68.50	68.10	70.80	68.70	68.20	67.00	*a*	67.80	70.30	69.65	69.30
22.....	68.60	68.10	67.90	70.80	68.60	67.70	67.40	*a*	67.60	70.60	69.55	69.00
23.....	68.20	68.45	69.05	71.05	68.15	68.10	67.60	*a*	67.80	70.70	69.20	70.20
24.....	68.25	68.05	68.90	70.50	67.35	67.30	68.20	66.90	67.70	70.35	68.90	71.65
25.....	68.10	68.00	68.40	70.45	68.30	68.00	67.20	67.30	67.50	70.20	69.00	70.70
26.....	68.10	68.25	68.90	70.60	68.45	67.60	67.60	67.50	67.40	70.00	69.60	70.50
27.....	68.85	68.65	69.70	70.95	68.35	67.70	67.50	*a*	67.30	69.90	69.00	70.35
28.....	70.00	68.60	71.00	71.15	68.95	67.60	67.50	*a*	67.30	69.40	68.75	70.10
29.....	69.90	......	70.10	71.25	68.45	67.40	67.60	67.50	67.70	69.80	68.70	69.40
30.....	69.15	......	70.20	71.70	67.70	*a*	64.50	67.50	67.80	69.25	69.35	69.20
31.....	68.10	......	69.90	......	67.50	......	67.50	67.80	......	68.75	......	69.90

a Water-surface below gage.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Hudson River below Dam at Stillwater, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	*a*	75.98	76.33	77.23	79.48	76.08	*a*	75.68	75.78	*a*	76.53	76.73
2.....	*a*	76.03	76.03	76.88	79.73	75.88	75.53	75.68	75.78	75.78	76.58	76.58
3.....	*a*	76.33	76.08	76.98	80.13	76.03	75.53	75.78	*a*	75.98	76.53	*a*
4.....	*a*	76.48	75.98	76.88	79.88	75.98	75.58	75.73	75.73	76.08	76.48	76.83
5.....	*a*	76.33	75.78	76.98	79.08	75.83	75.68	75.78	75.73	76.08	*a*	76.63
6.....	*a*	76.38	75.98	77.73	78.38	75.93	75.58	75.63	75.88	76.33	76.53	76.63
7.....	*a*	77.33	75.88	78.13	77.93	75.98	75.63	75.78	75.78	76.53	76.53	76.23
8.....	*a*	*b*	75.98	78.53	77.93	76.03	75.58	75.83	75.83	*a*	76.63	76.23
9.....	*a*	*b*	75.88	78.43	77.43	76.68	75.43	75.73	75.93	76.58	76.83	76.23
10.....	76.53	*b*	75.88	78.48	77 43	76.48	75.38	75.78	*a*	76.53	76.98	*a*
11.....	76.53	76.73	76.03	78.53	77.23	76.38	75.63	75.78	76.43	76.43	77.03	76.43
12.....	76.43	76.63	75,58	78.43	77.18	76.58	75.73	75.73	75.93	76.28	*a*	76.53
13.....	76.63	76.38	75.83	78.43	77.13	76.88	75.68	75.53	75.73	76.18	77.08	77.28
14.....	76.63	76.48	76.13	78.68	76.53	77.18	75.68	75.63	75.73	76.13	77.03	77.93
15.....	76.73	76.28	76.73	79.13	77.08	77.38	75.73	75.78	75.73	*a*	77.03	78.38
16.....	76.63	76.38	76.68	79.48	76.33	77.28	75.58	75.73	75.83	76.03	77.03	78.63
17.....	76.53	76.53	76.18	79.63	76.33	77 23	75.93	75.78	*a*	75.93	76.83	*a*
18.....	76.68	76.13	76.13	79.38	76.13	76.68	75.93	75.83	75.73	76.33	76.73	78.13
19.....	76.38	76.23	75.83	79.08	76.93	76.63	75.63	75.73	75.83	77.18	*a*	78.23
20.....	76.43	76.33	76.23	78.93	76.88	76.38	75.78	75.58	75.83	78.03	77.33	77.53
21.....	76.18	76.28	76.18	78.78	76.18	76.23	75.73	75.78	75.73	77.73	77.13	77.13
22.....	76.23	76.28	76.18	78.73	76.58	76.03	75.73	75.68	75.83	*a*	77.03	77.03
23.....	76.08	76.08	76.68	78.53	76.13	75.93	75.58	75.73	75.93	77.83	77.03	77.73
24.....	76.18	75.98	76.53	78.43	76.08	75.93	75.58	75.73	*a*	77.73	76.73	*a*
25.....	76.23	76.03	76.38	78.38	76.43	75.73	75.63	75.73	75.73	77.63	76.73	78.53
26.....	75.83	75.78	76.08	78.53	76.68	75.88	75.63	75.68	75.68	77.63	*a*	78.53
27.....	76.23	76.43	77.23	78.88	76.43	75.93	75.58	*a*	75.73	77.43	76.73	78.23
28.....	77.28	76.53	77.98	79.13	75.98	75.88	75.58	75.53	75.73	77.18	76.53	77.83
29.....	76.93	......	77.68	79.38	76.58	75.68	75.58	75.73	75.68	*a*	76.53	77.53
30.....	76.58	......	77.53	79.43	76.13	75.78	75.43	75.83	75.73	76.88	76.63	77.33
31.....	76.68	......	77.43	......	75.98	......	75.53	75.88	......	76.83	......	*a*

a No record. *b* Ice obstruction.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Hudson River at Highway Bridge, Stillwater, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	*a*	84.49	84.49	85.37	87.07	84.39	84.09	83.89	83.94	*a*	84.79	85.14
2.....	*a*	84.44	84.39	85.17	87.34	84.44	83.99	83.84	83.99	83.94	84.89	84.99
3.....	*a*	84.44	84.34	85.24	87.49	84.59	83.84	83.79	*a*	84.24	84.79	*a*
4.....	*a*	84.14	84.24	85.07	87.44	84.44	83.79	83.79	83.64	84.29	84.74	84.99
5.....	*a*	84.39	84.14	85.17	86.79	84.59	83.94	83.74	83.79	84.49	*a*	84.89
6.....	*a*	84.29	84.24	85.74	86.34	84.44	83.99	83.44	84.04	84.69	84.74	84.69
7.....	*a*	84.34	84.29	86.07	85.94	84.49	83.89	83.89	83.94	84.79	84.79	84.59
8.....	*a*	84.24	84.19	86.37	85.94	84.69	83.89	83.94	83.89	*a*	84.89	84.59
9.....	*a*	84.29	84.04	86.29	85.49	84.94	83.74	83.84	83.99	84.79	85.04	84.59
10.....	84.69	84.39	84.14	86.29	85.54	84.89	83.69	83.34	*a*	84.79	85.19	*a*
11.....	84.64	84.29	84.19	86.39	85.19	84.74	83.94	83.79	84.44	84.69	85.19	84.59
12.....	84.59	84.34	84.04	86.29	85.24	84.84	83.89	83.74	84.54	84.54	*a*	84.69
13.....	84.59	84.24	84.19	86.29	85.09	84.74	83.94	83.49	84.29	84.49	85.29	84.84
14.....	84.34	84.29	84.54	86.49	85.09	85.24	83.89	83.59	84.29	84.39	85.29	85.74
15.....	84.49	84.24	84.49	86.84	85.09	85.39	83.84	83.84	84.24	*a*	85.19	85.89
16.....	84.59	84.44	84.79	87.09	84.74	85.34	83.69	83.69	84.14	84.39	85.19	85.99
17.....	84.44	84.34	84.54	87.19	84.74	85.29	83.94	83.79	*a*	84.24	85.04	*a*
18.....	84.34	84.19	84.49	86.99	84.54	85.09	84.04	83.84	83.84	84.49	84.99	85.99
19.....	84.29	84.24	84.29	86.79	85.04	84.89	83.79	83.69	83.89	85.24	*a*	85.89
20.....	84.09	84.14	84.49	86.59	84.79	84.64	83.99	83.54	83.94	85.89	85.44	85.79
21.....	84.14	84.04	84.54	86.59	84.54	84.49	83.99	83.34	83.89	85.79	85.29	85.39
22.....	84.39	84.29	84.54	86.49	84.84	84.39	84.04	83.59	83.94	*a*	85.24	85.29
23.....	84.04	84.34	84.94	86.39	84.59	84.54	83.74	83.69	83.99	85.69	84.99	85.59
24.....	84.54	84.29	84.74	86.39	84.64	84.34	83.69	83.64	*a*	85.69	84.99	*a*
25.....	84.29	84.24	84.64	86.34	84.69	84.09	83.79	83.69	83.74	85.54	85.09	86.24
26.....	84.17	84.09	84.44	86.39	84.84	84.14	83.84	83.74	83.79	85.49	*a*	86.29
27.....	84.29	84.64	85.49	86.64	84.74	84.29	83.74	*a*	83.59	85.34	85.09	86.09
28.....	85.34	84.59	85.94	86.84	84.79	84.24	83.74	82.99	83.89	85.29	84.89	85.94
29.....	84.94	......	85.64	86.99	84.89	84.04	83.74	83.64	83.79	*a*	84.94	85.64
30.....	84.64	......	85.59	87.09	84.49	83.89	83.34	83.79	83.94	85.04	85.09	85.54
31.....	84.59	......	85.49	......	84.39	......	83.49	84.04	......	84.89	......	*a*

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Hudson River at Toll Bridge, Schuylerville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	85.05	85.05	85.20	86.45	90.40	84.85	84.20	84.10	84.40	83.85	85.05	85.70
2.....	85.65	85.10	85.00	86.00	91.00	84.90	84.15	83.95	84.25	84.20	85.30	85.55
3.....	86.95	85.05	84.55	86.10	91.55	84.90	84.10	84.00	84.10	84.45	85.25	85.40
4.....	86.75	84.75	84.50	86.30	90.60	84.50	84.15	84.00	84.00	84.65	85.15	85.45
5.....	86.00	84.90	84.60	86.55	89.55	85.00	84.15	83.95	83.85	84.75	84.75	85.20
6.....	85.35	85.15	85.05	87.00	88.35	84.85	84.05	83.75	84.15	84.95	85.10	85.00
7.....	85.15	85.20	84.95	87.90	87.85	84.80	83.95	83.85	84.05	85.15	85.10	85.05
8.....	85.70	84.85	84.90	88.55	87.45	85.10	83.95	84.10	84.10	85.00	85.25	85.00
9.....	85.95	84.95	84.90	88.20	86.65	85.40	83.80	84.00	84.25	85.25	85.55	84.95
10.....	85.65	85.00	84.85	88.60	86.75	85.50	83.75	83.95	84.70	85.15	85.75	84.95
11.....	85.50	85.00	84.80	88.50	87.00	85.80	84.00	84.00	85.10	85.05	85.80	85.00
12.....	85.45	85.20	84.80	88.30	86.00	85.40	84.05	84.00	84.75	84.75	85.90	85.20
13.....	85.35	85.15	85.00	88.30	85.50	86.15	84.00	83.70	84.55	84.70	86.15	85.85
14.....	85.20	85.05	85.15	88.90	85.50	86.35	83.90	83.60	84.50	84.60	85.90	87.00
15.....	85.05	85.15	85.30	89.70	85.30	86.10	83.95	83.95	84.50	84.15	85.90	87.35
16.....	85.25	84.90	85.60	90.35	85.25	85.40	83.85	83.75	84.40	84.55	85.80	87.50
17.....	85.08	84.80	86.00	90.35	85.10	85.60	84.20	84.05	83.95	84.40	85.60	87.40
18.....	84.90	84.95	86.00	89.85	85.85	85.40	84.20	83.95	84.05	84.70	85.55	87.35
19.....	84.60	84.60	85.60	89.45	86.20	85.00	83.95	83.95	84.10	85.90	86.00	86.90
20.....	84.50	84.80	85.50	89.15	85.30	84.80	84.15	83.80	84.00	87.25	86.25	86.45
21.....	84.70	85.05	85.20	88.85	84.80	84.75	84.05	83.50	84.05	86.85	86.05	86.00
22.....	84.85	84.90	85.55	88.85	85.40	84.75	84.00	83.80	84.15	86.55	85.85	85.85
23.....	85.05	84.80	85.80	88.70	85.45	84.70	83.90	83.80	84.15	86.90	85.70	86.90
24.....	85.15	84.70	85.35	88.60	85.30	84.85	83.80	83.85	83.85	86.85	85.55	87.90
25.....	84.70	84.65	85.20	88.60	85.25	84.85	83.95	83.85	83.80	86.65	85.55	88.00
26.....	84.60	84.50	84.95	89.15	85.25	84.60	84.00	83.90	83.85	86.50	85.20	87.90
27.....	85.30	85.70	86.90	89.60	85.20	84.30	83.80	83.50	83.90	86.20	85.45	87.55
28.....	87.00	85.55	87.60	89.75	85.55	84.00	83.85	83.25	83.90	85.85	85.15	87.30
29.....	86.00	......	86.75	89.95	85.45	84.00	83.85	83.80	83.90	85.45	85.25	86.80
30.....	85.80	......	86.70	90.20	84.85	84.20	83.50	84.05	84.10	85.40	85.60	86.70
31.....	85.30	......	86.70	......	84.75	......	83.50	84.15	......	85.25	......	86.45

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Hudson River at Free Bridge, near Liberty Mills, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	85.22	85.12	85.62	87.12	91.67	85.21	84.96	84.76	84.91	84.11	86.56	86.62
2.....	86.07	85.22	85.42	86.52	92.37	85.46	84.61	84.16	84.96	84.61	86.01	86.57
3.....	87.22	85.22	85.27	86.67	92.77	85.76	84.61	84.31	85.01	85.11	86.01	86.62
4.....	87.92	85.02	85.02	86.62	92.41	84.91	84.91	84.61	84.16	85.41	85.91	86.07
5.....	87.82	85.27	84.62	86.62	91.01	85.36	84.66	84.61	84.96	85.51	85.51	85.92
6.....	87.32	85.62	85.12	87.87	89.91	85.16	84.81	84.01	85.06	86.01	85.61	85.62
7.....	86.87	85.72	85.02	88.62	89.01	85.46	84.16	84.21	84.86	86.01	85.71	85.47
8.....	85.87	85.42	84.92	89.32	88.86	86.11	84.21	84.71	84.81	85.41	86.11	85.37
9.....	86.42	85.42	84.62	89.52	88.01	86.56	84.11	84.71	84.81	85.86	86.47	85.42
10.....	86.37	85.27	84.62	89.52	87.71	86.51	84.46	84.71	84.81	86.26	86.72	85.07
11.....	85.92	85.22	84.67	89.47	87.91	85.91	84.61	84.71	85.66	85.86	86.92	85.57
12.....	85.72	85.32	84.62	89.37	87.51	86.11	84.61	84.56	85.51	86.42	86.42	86.07
13.....	85.62	85.42	85.02	89.47	87.36	86.36	84.61	84.01	85.41	85.41	87.32	87.12
14.....	85.37	85.22	85.12	89.87	87.16	87.16	84.71	84.26	85.26	85.11	87.12	88.42
15.....	85.22	85.27	85.17	90.52	86.76	87.61	84.81	84.26	85.11	84.66	87.02	88.82
16.....	85.57	85.32	85.47	91.22	86.41	87.66	84.16	84.41	85.16	84.81	86.77	88.62
17.....	85.67	85.12	85.37	91.57	86.01	87.31	84.81	84.76	84.11	85.26	86.62	88.62
18.....	85.32	85.07	84.97	91.22	85.76	86.56	85.11	84.21	84.41	85.36	86.42	88.42
19.....	85.02	85.07	84.62	90.72	86.46	86.71	84.76	84.36	84.91	86.96	86.72	88.52
20.....	84.97	85.32	85.52	90.22	86.16	86.11	84.81	83.71	84.81	88.41	87.42	88.02
21.....	85.02	85.37	85.37	90.17	86.16	85.81	85.01	83.71	84.86	88.11	87.62	87.32
22.....	85.27	85.32	85.07	90.02	86.36	85.51	84.86	83.96	84.91	87.61	86.97	87.47
23.....	85.47	85.22	85.57	89.82	85.86	85.31	84.16	84.36	84.91	88.06	86.62	88.37
24.....	85.37	84.97	85.72	89.62	85.41	85.21	84.51	84.51	84.31	88.01	86.42	89.22
25.....	85.02	84.92	85.42	89.57	85.66	84.41	84.71	84.21	84.56	87.81	86.32	89.22
26.....	84.82	84.82	85.02	89.62	86.61	85.16	84.21	83.96	84.81	87.61	86.52	89.12
27.....	85.02	86.02	87.02	90.17	85.96	85.21	84.11	83.61	84.41	87.26	86.32	89.12
28.....	87.42	86.17	88.67	90.92	85.86	84.91	84.26	83.86	84.51	86.81	85.92	88.32
29.....	86.72	......	87.87	91.17	86.36	84.81	84.06	84.41	84.61	87.01	85.87	87.92
30.....	86.47	......	87.62	91.32	85.81	84.81	83.71	84.61	84.66	86.71	86.62	87.62
31.....	85.77	......	87.47	......	85.11	......	84.46	84.86	......	86.51	......	87.02

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Hudson River above Dam at Northumberland, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	104.08	102.38	103.43	104.18	105.38	103.78	103.43	102.33	103.08	103.98	103.93	104.73
2.....	104.38	102.88	102.83	104.43	105.73	103.53	103.93	102.43	102.78	104.08	104.13	104.68
3.....	104.48	102.63	102.28	103.68	106.23	103.48	104.33	102.68	102.58	102.48	104.28	104.83
4.....	104.38	101.63	102.28	103.03	106.18	*a*	103.83	102.58	102.43	103.13	104.18	104.58
5.....	104.43	103.23	103.63	103.63	105.53	*a*	103.93	102.63	102.48	103.58	104.53	104.13
6.....	104.38	103.23	103.38	103.78	104.98	*a*	103.53	103.73	102.33	104.13	104.38	103.23
7.....	104.48	102.78	103.13	104.43	104.98	103.63	103.63	103.23	102.33	104.53	104.28	102.63
8.....	104.38	102.43	102.38	104.73	104.73	104.43	103.68	102.53	102.43	104.58	104.33	102.58
9.....	104.48	102.63	102.53	104.98	104.43	104.68	104.08	102.53	102.73	104.73	104.63	102.53
10.....	104.03	102.48	101.93	104.73	104.63	104.68	103.88	102.38	104.53	104.43	104.73	103.88
11.....	103.68	103.03	102.43	104.68	104.98	104.93	103.63	102.58	104.38	104.23	104.73	104.38
12.....	103.58	102.68	103.68	104.78	104.78	104.63	103.28	102.48	103.33	103.83	104.93	104.53
13.....	103.78	103.28	103.38	104.88	104.68	104.63	102.28	103.73	103.18	103.28	105.13	105.03
14.....	103.33	102.93	103.33	105.13	105.03	104.88	102.48	103.23	103.88	103.13	104.73	105.73
15.....	103.23	103.23	103.08	105.38	104.38	105.08	102.43	102.33	102.73	104.13	104.73	106.03
16.....	103.73	102.98	103.43	105.98	104.18	104.98	104.03	102.63	102.63	103.58	104.73	106.03
17.....	103.03	102.63	103.33	105.98	104.08	104.98	103.63	102.63	103.93	103.08	104.63	106.03
18.....	103.48	103.13	102.58	105.63	103.83	105.83	105.03	102.28	103.08	103.73	104.63	106.03
19.....	102.53	103.28	103.33	105.43	104.73	104.73	102.48	102.53	102.43	105.03	104.83	105.28
20.....	102.38	102.98	103.43	105.23	104.63	104.33	102.68	103.18	102.38	105.73	104.68	105.13
21.....	102.58	102.88	103.18	105.03	104.83	103.78	102.73	102.98	102.53	105.53	104.73	105.13
22.....	103.58	103.03	103.53	105.18	104.48	103.33	102.68	102.23	102.68	105.53	104.73	104.73
23.....	102.98	103.18	103.83	105.18	104.48	103.18	104.18	102.43	102.58	105.78	104.48	105.48
24.....	102.58	102.63	103.68	105.18	104.48	102.83	103.43	102.23	103.83	105.28	104.43	106.03
25.....	102.28	102.38	103.33	104.98	104.38	104.33	102.63	102.23	103.28	105.23	104.33	106.03
26.....	102.18	103.23	103.63	105.03	104.83	103.83	102.43	102.28	102.33	105.13	104.53	105.98
27.....	102.23	103.63	104.58	105.28	103.88	102.88	102.48	102.88	102.23	104.98	104.43	105.78
28.....	104.13	103.88	104.78	105.53	104.93	102.73	102.28	103.53	102.68	104.88	103.33	105.53
29.....	103.63	......	104.83	105.68	104.43	102.48	102.28	103.33	102.48	104.93	104.33	105.38
30.....	103.78	......	104.63	106.13	103.78	102.63	104.08	103.03	102.63	104.68	104.53	104.68
31.....	103.03	......	104.48	......	103.33	......	103.33	102.83	......	104.28	......	104.83

a No record.

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Hudson River below Dam at Fort Miller, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	104.98	104.98	105.03	105.43	107.03	104.98	103.50	102.40	102.85	103.80	104.00	104.45
2.....	105.03	104.98	104.98	105.48	107.23	104.98	104.25	102.45	102.95	104.05	104.30	104.50
3.....	105.08	104.98	104.98	105.28	107.68	104.98	104.30	102.65	104.00	102.50	104.30	105.10
4.....	105.48	104.98	104.98	105.33	107.58	105.03	104.00	102.60	102.70	103.50	104.25	104.60
5.....	105.33	104.98	105.03	105.18	106.73	104.98	104.05	102.60	102.65	103.45	104.50	104.25
6.....	105.08	104.98	104.98	105.43	106.28	104.98	103.65	103.55	102.45	104.30	104.40	103.25
7.....	105.08	104.98	104.98	105.83	106.23	104.98	103.70	103.15	102.35	104.45	104.10	103.50
8.....	104.98	104.98	104.98	106.08	105.83	105.13	103.75	102.55	102.45	104.90	104.35	103.90
9.....	105.08	104.98	104.98	106.23	105.63	105.28	104.05	102.40	102.65	104.60	104.75	103.80
10.....	105.08	104.98	104.98	106.03	105.68	105.28	103.65	102.35	104.40	104.45	104.95	104.50
11.....	104.98	104.98	104.98	106.13	105.83	105.18	103.80	102.45	104.30	104.15	104.90	104.50
12.....	104.98	105.08	105.08	106.08	105.68	105.13	103.45	102.40	103.30	104.05	105.30	104.50
13.....	104.98	104.98	104.98	106.18	105.68	105.28	102.40	103.75	103.20	103.30	105.00	105.05
14.....	104.98	105.03	104.98	106.38	105.53	105.63	102.50	103.05	102.90	103.20	104.95	106.05
15.....	104.98	105.08	104.98	106.73	105.33	105.78	102.65	102.40	102.80	104.15	105.00	106.30
16.....	104.98	105.03	105.08	107.33	105.23	105.20	103.95	102.65	102.50	103.30	104.85	106.10
17.....	104.98	105.03	104.98	107.13	105.08	105.10	103.50	102.85	103.75	103.20	104.75	106.30
18.....	104.98	104.98	104.98	106.93	104.98	105.15	102.70	102.30	102.85	103.85	104.65	106.00
19.....	104.98	104.98	104.98	106.73	105.03	104.65	102.35	102.50	102.45	102.45	105.25	105.70
20.....	104.98	104.98	105.03	106.48	105.03	104.25	102.75	103.20	102.45	105.80	105.15	105.35
21.....	104.98	104.98	104.98	106.48	105.18	103.65	102.80	102.60	102.70	105.60	105.05	105.00
22.....	104.98	105.03	104.98	106.48	105.13	103.30	102.65	102.10	102.75	105.70	104.85	104.85
23.....	104.98	104.98	105.03	106.38	104.98	103.20	104.10	102.40	102.80	105.55	104.65	105.50
24.....	104.98	104.98	105.03	106.28	104.98	103.00	103.10	102.35	103.70	105.45	104.55	106.40
25.....	104.98	104.98	105.03	106.18	105.08	104.15	102.50	102.30	102.95	105.50	104.50	106.60
26.....	104.98	105.03	105.08	106.28	105.28	103.55	102.50	102.40	102.30	105.30	104.85	106.30
27.....	104.98	104.98	105.38	106.53	105.13	102.95	102.45	102.75	102.05	105.00	104.50	106.00
28.....	105.08	104.98	105.58	106.73	105.18	102.80	102.30	103.25	102.70	104.85	104.35	105.90
29.....	105.08	......	105.48	106.93	105.08	102.45	103.35	103.40	102.50	105.00	104.40	105.65
30.....	105.03	......	105.53	107.08	105.03	102.80	103.90	103.05	102.60	104.70	104.50	105.15
31.....	104.98	......	105.48	......	104.98	......	103.30	102.90	......	104.20	......	105.30

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Hudson River above Dam at For Miller, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	115.75	115.15	115.40	116.45	118.10	115.50	115.30	115.10	115.45	115.40	115.90	116.05
2.....	115.60	115.30	115.45	116.60	118.25	115.55	115.60	114.70	115.25	115.10	116.15	116.05
3.....	115.75	115.05	115.40	116.25	118.55	115.50	114.95	115.10	115.80	115.40	115.95	116.30
4.....	116.10	115.05	115.20	116.15	118.45	115.75	115.25	114.75	114.75	115.55	115.90	116.20
5.....	116.05	115.80	115.70	116.00	117.90	115.45	115.00	114.80	115.00	115.80	115.70	116.20
6.....	115.90	115.40	115.45	116.35	117.50	115.15	114.95	115.45	115.45	115.85	115.90	115.55
7.....	115.85	115.25	115.60	116.90	117.75	115.50	114.40	115.05	115.25	116.10	115.90	115.65
8.....	116.05	115.60	115.15	117.20	117.05	115.85	114.35	114.85	114.90	116.20	116.05	115.80
9.....	115.85	115.40	115.10	117.50	116.90	116.00	115.35	115.00	115.35	116.05	116.30	115.70
10.....	115.90	115.40	115.20	117.25	116.65	116.00	114.45	114.95	115.90	116.10	116.45	115.90
11.....	115.60	115.45	115.30	117.35	116.70	116.25	114.85	114.95	116.00	115.80	116.45	115.95
12.....	115.35	115.90	115.70	117.30	116.45	115.85	114.85	114.95	115.75	115.55	116.75	115.95
13.....	115.40	115.40	115.50	117.40	116.40	116.10	114.65	115.20	115.55	115.40	116.45	116.50
14.....	115.50	115.30	115.55	117.55	116.65	116.40	115.10	114.75	115.55	115.55	116.50	117.20
15.....	115.90	115.60	115.55	117.75	116.05	116.50	114.85	114.70	115.65	115.80	116.45	117.30
16.....	115.60	115.40	116.10	118.25	115.90	116.50	115.35	114.80	115.30	115.35	116.35	117.20
17.....	115.35	115.35	115.55	118.10	115.65	116.40	115.05	115.35	115.45	115.45	116.25	117.30
18.....	115.40	115.00	115.30	117.95	115.45	116.35	115.25	114.70	115.05	115.55	116.30	117.15
19.....	115.20	115.60	115.55	117.80	115.55	116.10	114.75	115.15	115.60	116.35	116.70	116.90
20.....	115.20	115.15	115.55	117.60	115.70	115.90	115.20	115.40	115.05	117.00	116.70	116.70
21.....	115.45	115.15	115.35	117.55	116.25	115.60	115.10	114.60	114.95	116.80	116.55	116.45
22.....	115.90	115.50	115.40	117.50	115.85	115.65	115.10	115.00	115.20	116.90	116.35	116.35
23.....	115.35	115.40	115.90	117.75	115.25	115.45	115.40	115.00	115.30	117.00	116.25	116.85
24.....	115.25	115.30	115.70	117.45	115.55	115.30	114.60	115.25	115.55	116.95	116.15	117.35
25.....	115.10	115.20	115.65	117.45	115.85	115.35	115.00	115.00	114.85	116.80	116.10	117.50
26.....	115.40	115.60	116.10	117.50	116.15	115.25	114.60	115.10	114.70	116.65	116.45	117.35
27.....	115.30	115.35	116.35	117.75	115.75	115.20	114.55	115.45	114.70	116.50	116.05	117.20
28.....	115.75	115.55	116.60	117.85	116.55	115.40	114.65	114.80	115.05	116.40	116.00	117.10
29.....	115.90	......	116.50	118.00	116.10	115.15	114.40	115.05	115.05	116.25	115.95	116.95
30.....	115.60	......	116.60	118.30	115.75	114.95	115.50	115.15	114.85	116.15	116.10	116.60
31.....	115.35	......	116.75	......	115.40	......	114.65	115.65	......	116.00	......	116.80

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Hudson River above Crocker's Reef Dam.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	119.61	119.76	119.86	120.76	122.66	119.86	119.76	119.71	119.71	119.41	120.16	120.61
2.....	119.91	119.96	119.81	120.76	122.91	119.96	119.46	119.56	119.76	119.86	120.26	120.61
3.....	120.11	119.71	119.86	120.66	123.16	120.16	119.66	119.76	119.86	119.71	120.26	120.26
4.....	120.41	119.76	119.61	120.56	122.86	119.86	119.46	119.61	119.31	119.86	120.21	120.36
5.....	120.31	119.51	119.71	120.51	122.21	120.01	119.66	119.56	119.51	119.91	119.86	120.21
6.....	120.26	119.86	119.76	120.81	121.81	119.81	119.66	119.46	119.61	120.11	120.26	120.11
7.....	120.21	119.81	119.81	121.26	121.36	119.91	119.56	119.56	119.66	120.36	120.01	120.01
8.....	119.96	119.76	119.71	121.66	121.41	120.41	119.46	119.76	119.71	120.11	120.26	120.11
9.....	120.11	119.81	119.56	121.61	121.01	120.46	119.41	119.61	119.81	120.41	120.66	120.16
10.....	120.06	119.76	119.76	121.66	121.06	120.36	119.46	119.61	119.96	120.36	120.76	119.81
11.....	120.01	119.81	119.66	121.81	120.86	120.21	119.66	119.66	120.26	120.26	120.71	120.16
12.....	120.01	119.56	119.71	121.81	120.86	120.36	119.66	119.61	119.91	120.06	120.61	120.26
13.....	119.86	119.76	119.91	121.81	120.81	120.51	119.66	119.41	119.91	119.81	120.71	120.81
14.....	119.86	119.76	119.96	121.96	120.71	120.86	119.61	119.41	119.81	119.81	120.81	121.56
15.....	119.81	119.76	119.96	122.31	120.56	121.01	119.56	119.41	119.81	119.56	120.81	121.71
16.....	120.06	119.76	120.06	122.51	120.21	120.91	119.46	119.61	119.86	119.66	120.66	121.56
17.....	119.76	119.86	119.91	122.66	120.01	120.81	119.71	119.76	119.81	119.91	120.56	121.51
18.....	119.91	119.71	119.71	122.51	120.11	120.61	119.71	119.61	119.61	120.06	120.41	121.46
19.....	119.61	119.71	119.51	122.26	120.71	120.41	119.66	119.61	119.61	120.26	120.41	121.36
20.....	119.61	119.86	119.96	122.16	120.26	120.31	119.66	119.36	119.56	121.26	120.76	121.11
21.....	119.76	119.71	119.86	122.16	120.11	120.11	119.66	119.41	119.66	121.16	120.81	120.81
22.....	119.66	119.71	119.86	122.11	120.56	120.06	119.66	119.46	119.61	120.01	120.66	120.71
23.....	119.81	119.86	120.16	122.01	120.11	119.91	119.36	119.51	119.76	121.21	120.56	121.11
24.....	119.71	119.76	120.16	121.81	120.21	119.81	119.41	119.61	119.41	121.06	120.41	121.56
25.....	119.66	119.76	120.06	121.76	120.26	119.91	119.61	119.61	119.46	121.11	120.41	121.76
26.....	119.76	119.51	119.61	121.81	120.71	119.81	119.61	119.61	119.56	121.16	120.31	121.76
27.....	119.76	119.76	120.56	122.21	120.31	119.76	119.46	119.36	119.51	120.86	120.31	121.56
28.....	120.26	120.16	121.01	122.46	120.46	119.76	119.56	119.51	119.71	120.66	120.26	121.46
29.....	120.01	......	120.91	122.61	120.36	119.66	119.46	119.61	119.51	120.26	120.26	121.16
30.....	120.11	......	120.91	122.66	119.96	119.71	119.46	119.61	119.56	120.41	120.46	120.76
31.....	119.91	......	120.86	......	119.96	......	119.66	119.76	......	120.31	......	120.71

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Hudson River at Bridge St., Fort Edward, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	120.07	120.37	120.07	121.37	125.77	120.37	119.37	119.87	120.17	120.47	119.87	120.27
2	120.07	120.37	119.87	121.37	126.37	120.37	119.37	119.87	119.97	120.67	119.87	120.27
3	119.87	120.27	119.87	121.37	125.77	120.37	119.87	119.87	120.17	120.67	119.67	120.32
4	119.87	120.17	119.87	121.57	124.62	119.97	119.87	119.87	120.37	120.87	119.67	120.37
5	119.87	120.07	119.67	121.97	123.37	119.97	119.87	119.87	120.57	120.87	119.67	120.37
6	119.87	120.27	119.77	122.87	123.37	120.07	119.87	119.67	120.67	120.87	119.87	120.47
7	119.87	120.27	119.87	122.87	123.37	120.32	119.87	119.67	120.42	120.87	119.87	120.67
8	119.87	120.27	119.87	123.27	123.37	120.07	119.87	119.87	120.37	120.67	119.87	120.67
9	119.87	120.27	119.87	122.97	123.37	119.87	119.87	119.87	120.32	120.87	119.87	120.47
10	120.07	120.27	120.07	123.37	123.37	119.87	119.87	119.87	120.27	120.67	119.97	120.47
11	120.07	120.27	120.07	123.37	122.87	120.42	119.67	119.87	119.97	120.37	120.32	120.87
12	120.57	120.27	120.07	123.47	121.72	120.77	119.57	119.87	120.17	120.07	120.42	121.77
13	120.67	120.17	120.07	123.47	121.07	121.52	119.67	119.67	120.07	120.07	120.87	122.52
14	120.87	120.07	120.37	123.87	120.77	121.77	119.87	119.67	120.07	119.87	121.37	122.67
15	120.87	120.17	120.07	124.27	120.37	121.87	119.87	119.67	120.07	119.67	121.37	122.97
16	120.57	120.27	120.07	124.97	120.37	121.87	119.87	119.67	120.07	119.87	121.17	123.07
17	120.47	120.27	120.62	125.07	120.47	121.87	119.97	119.67	119.87	120.17	121.07	122.87
18	120.47	120.17	119.87	124.87	120.87	121.37	120.07	119.67	119.87	120.57	120.87	122.57
19	120.47	120.07	119.87	124.32	120.87	121.12	119.87	119.67	120.07	121.27	121.07	122.37
20	120.27	119.87	120.37	124.07	120.87	120.77	119.87	119.67	119.87	121.97	121.07	122.77
21	120.27	119.87	119.87	123.97	120.52	120.37	119.87	119.87	119.87	121.87	121.07	122.97
22	120.47	120.07	119.87	123.87	120.37	120.07	119.87	119.87	119.87	121.77	120.87	123.52
23	120.47	120.07	120.37	123.67	120.37	119.87	119.42	119.87	119.87	122.07	120.77	123.67
24	120.67	119.87	120.37	123.67	120.97	119.47	119.47	120.07	119.77	121.87	120.67	123.52
25	120.67	119.87	120.37	123.47	120.87	119.37	119.87	120.07	119.87	121.87	120.47	123.22
26	120.57	120.07	120.37	123.67	121.07	119.37	119.87	119.87	120.07	121.37	120.37	122.87
27	120.47	120.07	121.02	124.82	121.07	119.37	119.67	119.67	120.12	121.27	120.32	122.87
28	120.37	120.27	121.87	124.77	120.87	119.47	119.67	119.77	120.27	121.17	120.27	123.52
29	120.37	......	121.87	125.07	120.42	119.42	119.77	120.07	120.37	120.87	120.27	121.87
30	120.37	......	121.87	125.42	120.37	119.37	119.42	119.97	120.37	120.42	120.27	121.77
31	120.37	......	121.87	......	120.37	......	119.47	120.17	......	119.87	......	121.37

Mean Daily Elevation of Water-surface (Barge Canal Datum) of Hudson River above Feeder Dam, at Glens Falls, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	281.57	281.57	281.62	282.77	284.97	281.67	281.67	281.12	282.12	281.47	282.72	283.12
2	281.87	281.72	281.72	282.67	285.27	281.87	281.52	281.52	282.17	282.42	282.77	283.12
3	282.17	281.47	281.62	282.57	285.62	282.02	281.67	281.27	281.87	282.32	282.77	283.07
4	282.42	281.82	281.72	282.52	285.17	281.97	281.37	281.17	281.37	282.52	282.72	282.87
5	282.37	281.47	281.57	282.52	284.52	281.92	281.52	281.37	281.82	282.87	282.67	282.42
6	282.32	281.87	281.72	282.52	284.02	281.72	281.22	281.12	281.77	283.02	282.57	282.42
7	282.27	281.82	281.72	283.27	283.57	281.97	281.22	281.42	281.27	283.07	282.67	282.72
8	282.07	281.72	281.52	283.67	283.42	282.37	281.22	281.27	281.37	283.22	282.92	282.67
9	282.07	281.67	281.57	283.67	283.02	282.52	280.92	281.37	282.67	283.12	283.27	282.77
10	282.17	281.57	281.57	283.67	283.02	282.37	281.22	281.37	282.77	283.02	283.42	282.67
11	282.02	281.77	281.57	283.92	283.17	282.22	281.32	281.27	282.97	282.92	283.42	282.87
12	281.97	281.57	281.57	283.97	282.82	282.17	281.12	281.17	282.77	282.77	283.32	283.12
13	281.82	281.72	281.77	283.97	282.77	282.37	281.32	281.22	282.62	282.62	283.37	283.67
14	281.87	281.57	281.57	284.17	282.82	282.87	281.42	281.37	282.47	282.37	283.42	284.47
15	281.87	281.62	281.67	284.52	282.27	282.97	281.27	281.77	282.37	282.27	283.42	284.42
16	281.97	281.57	281.82	284.77	282.32	282.82	281.32	281.82	281.87	282.42	283.32	284.22
17	281.72	281.52	281.82	284.92	282.07	282.67	281.72	281.62	281.37	282.17	283.12	284.07
18	281.72	281.57	281.72	284.67	282.02	282.47	281.47	281.77	281.77	282.12	283.02	284.07
19	281.52	281.47	281.62	284.52	282.67	282.22	281.52	281.52	281.72	283.62	283.47	283.92
20	281.47	281.82	281.97	284.32	282.12	282.02	281.57	281.42	281.67	283.82	283.42	283.62
21	281.72	281.47	281.67	284.27	282.12	281.87	281.52	280.92	281.72	283.77	283.42	283.32
22	281.52	281.77	281.67	284.22	282.02	281.77	281.32	281.37	281.97	283.67	283.32	283.27
23	281.92	281.67	281.72	284.12	281.97	281.62	280.97	281.87	281.57	283.62	283.22	283.62
24	281.72	281.72	281.82	284.02	282.17	281.52	281.32	281.42	281.02	283.67	283.02	284.22
25	281.47	281.67	281.82	283.97	282.12	281.42	281.12	281.12	280.97	283.67	282.97	284.37
26	281.77	281.57	281.57	284.32	282.62	281.52	281.02	281.22	281.32	283.57	282.87	284.27
27	281.57	281.72	282.17	284.52	282.02	281.42	280.87	280.77	281.97	283.42	282.77	284.12
28	281.67	281.87	282.67	284.72	282.57	281.37	280.77	280.97	281.67	283.17	282.67	283.97
29	281.67	......	282.82	284.92	282.07	281.22	280.82	282.07	281.62	282.97	282.82	283.47
30	282.02	......	282.87	284.97	281.82	281.77	280.82	282.02	281.57	282.82	283.07	283.37
31	281.82	......	282.87	......	281.77	......	281.72	282.52	......	282.72	......	283.17

RECORDS OF DISCHARGE, UPPER HUDSON RIVER AND TRIBUTARIES.

In the following pages will be found tables giving the daily discharge and monthly run-off of the upper Hudson river and its tributaries at a considerable number of locations. These records are derived from various sources. Several important records, including two records of Hudson river at Mechanicville, are maintained and furnished by private corporations. Other records are maintained by this Department and others by the State Conservation Commission and the United States Geological Survey. Some of these are maintained in coöperation with private corporations. Some of the records are at dams and mills and others are at current-meter stations. At some, the conditions are known to be good; at others they are poor at certain seasons of the year. Some of these records are of long duration, notably the record at Mechanicville, established in December, 1888, and the record at Fort Edward, established in December, 1895. Most of the records are, however, of much shorter duration and it is only within the past two or three years that a sufficient number of gaging stations has been maintained in this basin to enable reliable comparisons of the different records to be made. The results of gagings at many of these stations have been available for only one or two years. A study of the results has been undertaken, with a view to determining the relative accuracy of the different records, but it has not been carried far enough at this time to enable final conclusions to be drawn. It appears quite certain, however, that the record of the West Virginia Pulp & Paper Company's dam in Mechanicville is substantially accurate in its present form, although this record in earlier years was probably somewhat in error in regard to high-water conditions, owing to the use of a less reliable formula for discharge over the dam than that at present applied. It also appears that the record at Crocker's Reef dam, maintained by this Department, beginning in 1907, is probably very reliable, as the conditions are exceptionally good. It has been known for several years that the calculated discharge at Fort Edward was probably somewhat in error, especially during the low-water season. In view of the fact that no reliable basis existed for determining the correct discharge and making the necessary

modifications in this record, it has seemed best to continue the computation of the record in the same manner pursued from its inception. In applying the Fort Edward data it should be understood that the low-water flow as recorded is probably somewhat excessive throughout the entire record.

As to other records of the Hudson river and tributaries it can only be said at this time that they are probably more consistent than would appear from a direct comparison. In some cases where the recorded run-off per square mile at adjacent stations differs, it does not necessarily follow that either one of the records is incorrect. There are wide variations in the hydrological conditions in different portions of the upper Hudson drainage basin. For example, the topography, culture, geology and soil for the Hudson and its tributaries above North Creek are all essentially different from the corresponding features of the drainage basin of Saratoga lake outlet. The hydrological features of both the above mentioned basins are essentially different from the corresponding features of the drainage basins of the Battenkill and Hoosic streams. The conditions are somewhat further complicated by diversion from the Hudson river to supply the Champlain canal through Glens Falls feeder and at Northumberland dam.

HUDSON RIVER ABOVE DAM OF ADIRONDACK ELECTRIC POWER CORPORATION, NEAR MECHANICVILLE, N. Y.

This gage was established August 18, 1905, by this Department. The gage is a vertical staff divided to feet and tenths and reading from zero to 16 feet. It is attached to the upstream face of the river wall at the right-hand end of the line of waste-gates forming a continuation of the dam. Readings are taken at 8 A. M. and 5 P. M. by H. C. Tinker. The gage zero is at elevation 43.00. A record is kept in the adjoining power-plant, showing the use of water by the turbine wheels, and also the waste over the dam, through gates, etc.

The accompanying tables show the discharge as calculated at the power plant. The dam is of the ogee type, but the discharge is calculated by the East Indian Engineers' formula for dams with broad crest.

The record of the flow of Hudson river at this plant was begun October 1, 1897. The complete record year by year, including

certain recent years, records for which had appeared in previous reports, was published in the State Enginner's report for 1910.

Acknowledgment is made to the Adirondack Electric Power Corporation for furnishing copies of this record for the earlier years during which it was kept.

Mean Daily Discharge, Second-feet, of Hudson River at Dam of Adirondack Electric Power Corporation, near Mechanicville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	*2,585	4,416	5,435	11,127	22,046	3,489	2,601	2,550	3,033	*1,163	7,305	10,249
2	6,279	4,413	4,146	*8,814	24,931	3,713	*2,112	1,713	1,493	1,935	7,263	9,258
3	13,241	4,515	4,008	10,126	26,801	4,223	2,075	1,651	*1,614	4,487	6,389	*7,059
4	13,439	3,360	4,121	8,764	25,268	*2,935	1,864	1,860	2,192	3,921	6,691	9,102
5	10,114	*3,639	*2,124	8,945	20,757	4,695	1,384	1,111	1,962	5,122	*4,626	6,013
6	8,125	4,525	4,237	15,424	16,958	3,742	2,040	*1,211	2,283	5,255	7,194	5,616
7	8,014	4,589	4,045	18,897	*13,624	3,739	1,886	1,001	1,737	6,443	6,231	5,279
8	*5,662	4,823	3,012	19,920	14.443	4,800	1,275	1,979	2,400	*4,167	8,387	5,655
9	7,455	4,067	2,829	*18,058	10,059	5,843	*1,695	1,749	2,080	7,083	9.138	5,606
10	5,605	3,977	2,823	18,336	10,629	6,292	857	1,741	*2,447	6,560	10,097	*3,725
11	5,069	4,130	2,910	17,390	9,997	*4,109	1,871	1,618	6,165	5,269	9,317	6,829
12	5,699	*3,045	*1,781	17,546	9,553	5,960	2,030	1,253	4,836	4,863	*7,614	7,446
13	5,983	4,085	3,855	17,225	8,586	5,902	1,583	*886	3,189	5,050	11,450	8,870
14	4,438	3,249	4,250	18,192	*6,937	7,610	1,579	1,432	3,731	5,276	10,591	11,959
15	*4,315	2,654	4,896	23,457	8,569	9,184	1,180	1,380	3,841	*2,798	11,548	13,500
16	4,730	3,430	5,903	*26,053	5,283	9,009	*1,256	1,762	4,285	4,738	9,856	12,998
17	4,602	3,391	5,597	25,273	5,749	8,598	1,630	1,574	*1,344	3,711	8,895	*13,498
18	4,164	3,658	4,413	23,047	5,312	*5,705	1,952	1,544	3,051	4,981	8,146	14,024
19	4,440	*2,392	*2,428	20,878	5,899	6,823	1,662	1,568	2,818	10,893	*12,013	12,541
20	3,568	4,110	4,775	18,857	6,125	5,356	1,973	*1,331	2,376	17,654	13,449	11,240
21	4,045	4,063	4,816	18,532	*3,502	4,932	1,729	1,142	2,135	14,904	12,865	9,673
22	*3,351	2,648	4,872	17,850	5,989	4,068	1,875	1,139	2,470	*12,799	11,290	9,244
23	3,012	4,033	7,858	*17,230	4,577	4,046	*1,008	1,108	2,444	16,277	10,039	13,028
24	4,088	3,781	9,865	16,891	3,981	3,257	1,614	928	*1,733	15,099	9,596	*17,539
25	3,410	2,847	6,319	16,561	5,184	*2,055	1,928	1,444	1,346	14,215	8,531	19,001
26	2,969	*2,126	*4,179	17,222	5,282	3,844	1,861	1,464	1,942	12,387	*6,765	17,571
27	3,924	6,829	12,437	19,526	5,477	3,783	1,751	*772	1,717	12,057	9,810	18,085
28	11,102	6,216	19,933	21,225	*3,573	2,835	1,958	1,291	2,441	9,897	7,650	16,127
29	*7,640	......	14,178	22,847	5,926	2,341	1,687	1,850	1,930	*7,735	7,427	14,038
30	6,550	......	14,540	*23,215	3,883	847	*590	2,120	1,719	10,069	9,796	10,211
31	5,542	......	13,153	....	3,651	......	1,126	2,125	......	8,061	....	*9,304
Mean	5,909	3,893	6,121	17,914	9,953	4,791	1,666	1,493	2,558	7,899	8,999	10,783

* Sunday.

Monthly Discharge of Hudson River at Dam of Adirondack Electric Power Corporation, near Mechanicville, N. Y.

[Drainage area, 4,570 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	13,439	3,012	5,909	1.29	1.49
February	6,829	2,126	3,893	0.852	0.887
March	19,933	1,781	6,121	1.34	1.54
April	26,053	8,764	17,914	3.92	4.37
May	26,801	3,502	9,953	2.18	2.51
June	9,184	847	4,791	1.05	1.17
July	2,601	590	1,666	0.364	0.420
August	2,550	772	1,493	0.327	0.377
September	6,165	1,344	2,558	0.560	0.625
October	17,654	1,163	7,899	1.73	1.99
November	13,449	4,626	8,999	1.97	2.20
December	19,001	3,725	10,783	2.36	2.72

Daily Precipitation, in Inches, at Plant of Adirondack Electric Power Corporation, near Mechanicville, N. Y.

DAY.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.
1911.												
1	0.16	0.12	T	T	0.40		T			0.63		
2	0.23	T			T				0.14			T
3	0.51	0.09								0.58		
4				0.93						0.04		
5	*T		0.40			0.53			1.60			
6		0.33	0.10	0.03		0.23	0.62			0.83	0.13	
7		0.03				0.47			0.88		0.03	0.07
8	0.10	0.03		0.28				0.07	0.52			0.04
9			0.11						0.75		T	
10						0.03						
11						0.47		0.05	0.05	T		T
12	T		T		T	0.88					0.61	0.06
13		0.05		T		0.60						
14	0.01	T	0.59	0.23							0.15	0.44
15			T			0.05		0.19	T			0.45
16								0.35	0.06			0.35
17		0.03	0.03	T			0.91		T	1.30	0.43	
18					0.10			0.09		1.48	T	T
19			0.48	0.11	0.56	0.06	0.07			0.12		
20		0.03				T	0.03				0.04	
21	T		T				T		0.16	0.11	T	T
22						0.04				0.77		0.87
23		T			0.27		T				0.03	
24					0.23	0.08	0.21	T				
25	*T	T			0.30	0.03		0.70	0.15			
26	0.06		0.23			T					0.12	0.23
27	0.77		0.21			0.10		0.15	0.05	0.05		
28			T				0.54	0.61	0.04		T	
29	0.04		0.71						0.65			
30	T		T	0.40			0.07			T		0.18
31					0.45					0.25		
Total	1.88	0.80	2.86	1.98	2.31	3.57	2.45	2.21	5.05	6.16	1.54	2.70

T means trace. * Snow.

HUDSON RIVER AT WEST VIRGINIA PULP AND PAPER CO.'S MILL, MECHANICVILLE, N. Y.

A record of the flow of Hudson river at Mechanicville has been kept at the Duncan dam since December, 1888. The record includes two daily readings of the depth on the crest of the dam, and a continuous record of the run of the water-wheels in the adjoining paper-mill. The accompanying tables, computed by Mr. R. P. Bloss, the engineer of the West Virginia Pulp and Paper Company, show the daily and monthly mean flow at Mechanicville.

The dam at Mechanicville was raised during 1904, a concrete crest and apron being added, so that the dam has now a rounded, or ogee cross-section. A discharge curve has been calculated, using coëfficients of discharge derived from United States Geological Survey experiments on models of dams of ogee cross-section.

Water carried in Champlain canal, which parallels Hudson river from Fort Edward to Albany, is not included in the estimated discharge.

Mean Daily Discharge, Second-feet, of Hudson River at West Virginia Pulp and Paper Co.'s Mill, Mechanicville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	*2,989	3,648	4,711	10,097	23,150	3,313	1,798	2,038	2,687	*489	6,386	8,867
2	4,340	2,761	3,794	*8,047	22,894	2,969	*2,289	1,770	1,251	1,991	6,172	7,539
3	13,137	4,522	3,923	8,720	26,241	3,507	2,359	1,368	*1,439	3,230	5,908	*5,750
4	14,021	2,474	3,761	7,481	24,834	*2,436	1,972	1,472	2,028	3,034	5,629	7,459
5	9,415	*4,302	*1,695	7,061	20,943	4,113	1,493	1,367	1,027	3,823	*3,917	4,985
6	7,554	3,279	*2,158	13,543	15,808	3,478	1,492	*391	1,746	4,838	6,644	4,633
7	6,587	4,123	3,737	16,775	*11,293	3,072	1,650	994	1,446	4,906	5,029	4,344
8	*5,571	3,276	2,796	19,541	14,434	4,349	1,284	1,706	1,688	*4,305	6,503	4,434
9	7,394	3,291	1,882	*16,937	9,258	5,229	*670	1,444	2,035	5,566	7,448	5,055
10	5,970	3,401	2,592	17,207	9,643	5,654	924	1,143	*3,080	5,283	8,447	*3,495
11	5,461	3,870	3,110	17,119	7,632	*3,274	1,154	1,088	6,507	4,797	7,864	5,896
12	5,125	*3,356	*1,633	16,027	7,916	5,498	1,393	1,337	4,148	4,488	*5,759	5,924
13	4,292	2,763	1,892	15,877	7,186	5,241	1,548	*368	3,626	4,045	12,149	7,420
14	3,894	2,785	4,142	16,812	*4,898	6,822	1,133	1,070	3,772	4,367	9,506	11,575
15	*3,759	2,000	4,051	22,033	7,821	9,402	1,587	1,581	3,641	*1,854	9,642	14,133
16	5,318	2,683	8,500	*23,628	5,279	9,007	*600	1,137	3,163	2,988	7,769	13,273
17	3,414	2,203	5,162	24,638	5,469	8,946	1,460	1,709	718	2,984	7,370	*13,709
18	2,960	2,903	4,279	22,892	4,589	*6,026	1,983	1,167	*1,179	6,176	6,643	14,978
19	3,442	*3,217	*3,002	20,404	4,768	8,506	1,426	1,230	2,310	16,047	*10,961	12,718
20	2,302	3,338	5,456	18,774	5,760	5,203	1,354	*995	1,105	16,528	11,761	11,006
21	1,894	4,140	5,183	18,332	*3,346	4,670	1,425	1,004	1,025	13,781	10,086	8,941
22	*3,254	3,292	4,636	17,671	5,512	3,780	1,402	865	1,590	*14,123	9,053	8,096
23	1,963	3,579	7,926	*15,246	5,007	3,483	*1,282	1,046	943	16,171	7,977	13,181
24	3,846	2,873	7,255	16,890	3,380	2,379	1,185	1,040	*718	14,143	7,141	*18,220
25	3,383	1,974	5,835	15,574	4,831	*1,745	1,182	1,140	1,165	13,045	7,730	18,623
26	2,243	*2,257	*4,412	15,431	3,989	2,057	1,368	1,178	1,123	11,244	*5,175	17,475
27	3,150	6,035	12,921	17,420	4,554	3,042	967	*333	1,050	10,111	7,664	15,878
28	8,504	5,125	19,893	19,291	*2,835	2,920	1,148	629	1,004	8,612	5,797	15,184
29	*6,338	......	13,788	22,014	6,180	1,644	1,205	888	1,030	*5,770	6,469	11,593
30	6,912	......	13,446	*21,554	3,851	1,025	*369	1,550	1,680	8,761	8,283	8,686
31	5,013	......	11,457	....	3,747	......	1,048	1,577	......	6,786	....	*8,615
Mean	5,272	3,338	5,775	16,768	9,263	4,426	1,360	1,181	1,997	7,235	7,563	10,054

* Sunday.

Monthly Discharge of Hudson River at West Virginia Pulp and Paper Co's Mill, Mechanicville, N. Y.
[Drainage area, 4,500 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	14,021	1,894	5,272	1.17	1.35
February	6,035	1,974	3,338	0.742	0.773
March	19,893	1,633	5,775	1.28	1.48
April	24,638	7,061	16,768	3.73	4.16
May	26,241	2,835	9,263	2.06	2.38
June	9,402	1,025	4,426	0.984	1.10
July	2,359	369	1,360	0.302	0.348
August	2,038	333	1,181	0.262	0.302
September	6,507	718	1,997	0.444	0.495
October	16,528	489	7,235	1.61	1.86
November	12,149	3,917	7,563	1.68	1.87
December	18,623	3,495	10,054	2.23	2.57

HUDSON RIVER AT CROCKER'S REEF DAM.

A gage was established above Crocker's Reef 450 feet upstream from the head of Thompson island April 11, 1904, by J. A. O'Connor, for this Department. The reef has since been submerged by construction of a dam for the Barge canal. The gage is a painted scale subdivided to tenths of a foot from zero to 18 feet and is attached to the downstream side of a large elm tree. The gage zero is at elevation 115.06. The regular observer is John H. Donnelly, Jr.

Crocker's Reef dam crosses the Hudson river at the upper end of Thompson island about six miles below Fort Edward. This dam, which was constructed in connection with the New York Barge canal, is of concrete masonry and has an ogee cross-section. The crest is at elevation 119.00, Barge canal datum, and was trowelled down to a uniform level during construction. This was done with care and accuracy, to provide for the use of the dam as a gaging weir. The dam was completed August 27, 1907. A record of the stage of the stream at a distance of about 1,200 feet upstream has been maintained since April 11, 1904. The mean daily elevations for the years 1904 to 1908, inclusive, are contained in the State Engineer's report for 1908, pages 641–644. Computations of discharge have been made, beginning September 1, 1907.

The entire flow of the Hudson river passes over this dam, excepting what is carried past the dam in the present Champlain canal. The accompanying tables show the flow of the river proper, not including the flow in Champlain canal. The results of gagings to determine the flow in Champlain canal are also given. The discharge over the dam has been computed, using a variable coëfficient, the coëfficient used being 3.09 for low stages of the stream, but increasing as depth on crest increases. It is assumed that the natural slope in the channel from the gage down to the dam is approximately equal to the head due to velocity of approach and that the two elements counterbalance, no separate correction for velocity of approach being made.

At higher stages of the stream the Crocker's Reef dam becomes submerged and the discharge is less than for an unsubmerged weir with the same depth on the crest. The flow for higher stages has been reduced to take into account the effect of submergence.

Mean Daily Discharge, Second-feet, of Hudson River at Crocker's Reef Dam.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	*1,100	1,550	1,875	5,775	19,075	1,875	1,550	1,400	1,400	*575	2,950	4,950
2	2,050	2,199	1,700	*5,775	21,000	2,199	*702	965	1,550	1,875	3,350	4,950
3	2,750	1,400	1,875	5,225	22,775	2,950	1,250	1,550	*1,875	1,400	3,350	*3,350
4	3,990	1,550	1,100	4,716	20,600	*1,875	702	1,100	......	1,875	3,150	3,770
5	3,550	*830	*1,400	4,482	15,650	2,348	1,250	965	830	2,050	*1,875	3,150
6	3,350	1,875	1,550	6,050	12,600	1,700	1,250	*702	1,100	2,750	3,350	2,750
7	3,150	1,700	1,700	8,700	*9,350	2,050	965	965	1,250	3,770	2,348	2,348
8	*2,199	1,550	1,400	11,475	9,700	3,990	702	1,550	1,400	*2,750	3,350	2,750
9	2,750	1,700	965	*11,100	7,158	4,236	*575	1,100	1,700	3,990	5,225	2,950
10	2,549	1,550	1,550	11,475	7,479	3,770	702	1,100	*2,199	3,770	5,775	*1,700
11	2,348	1,700	1,250	12,600	6,325	*3,150	1,250	1,250	3,350	3,350	5,500	2,950
12	2,348	*965	*1,400	12,600	6,325	3,770	1,250	1,100	2,050	2,549	*4,950	3,350
13	1,875	1,550	2,050	12,600	6,050	4,482	1,250	*575	2,050	1,700	5,500	6,050
14	1,875	1,550	2,199	13,724	*5,500	6,325	1,100	575	1,700	1,700	6,050	10,732
15	*1,700	1,550	2,199	16,450	4,716	7,158	965	575	1,700	*965	6,050	11,850
16	2,549	1,550	2,549	*18,015	3,150	6,600	*702	1,100	1,875	1,250	5,225	10,732
17	1,550	1,875	2,050	19,075	2,348	6,050	1,400	1,550	*1,700	2,050	4,716	*10,364
18	2,050	1,400	1,400	18,015	2,750	*4,950	1,400	1,100	1,100	2,549	3,990	10,032
19	1,100	*1,400	*830	16,050	5,500	3,990	1,250	1,100	1,100	3,350	*3,990	9,350
20	1,100	1,875	2,199	15,275	3,350	3,550	1,250	*468	965	8,700	5,775	7,800
21	1,550	1,400	1,875	15,275	*2,750	2,750	1,250	575	1,250	8,100	6,050	6,050
22	*1,250	1,400	1,875	14,900	4,716	2,549	1,250	702	1,100	*7,158	5,225	5,500
23	1,700	1,875	2,950	*14,098	2,750	2,050	*468	830	1,550	8,400	4,716	7,800
24	1,400	1,550	2,950	12,600	3,150	1,700	575	1,100	*575	7,479	3,990	*10,732
25	1,250	1,550	2,549	12,225	3,350	*2,050	1,100	1,100	702	7,800	3,990	12,225
26	1,550	*830	*1,100	12,600	5,500	1,700	1,100	1,100	965	8,100	*3,550	12,225
27	1,550	1,550	4,716	15,650	3,550	1,550	702	*468	830	6,325	3,550	10,732
28	3,350	2,950	7,158	17,608	*4,236	1,550	965	830	1,400	5,225	3,350	10,032
29	*2,348	......	6,600	18,700	3,770	1,250	702	1,100	830	*3,350	3,350	8,100
30	2,750	......	6,600	*19,075	2,199	1,400	*702	1,100	965	3,990	4,236	5,775
31	2,050	......	6,325	....	2,199	....	1,250	1,550	......	3,550	....	*5,500
Mean	2,151	1,587	2,514	12,730	7,406	3,186	1,017	1,008	1,412	3,950	4,283	6,792

* Sunday.

Monthly Discharge of Hudson River at Crocker's Reef Dam, N. Y.
[Drainage area, 2,959 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	3,990	1,100	2,151	0.727	0.838
February	2,950	830	1,587	0.536	0.558
March	7,158	830	2,514	0.850	0.980
April	19,075	4,482	12,730	4.30	4.80
May	22,775	2,199	7,406	2.50	2.88
June	7,158	1,250	3,186	1.08	1.20
July	1,550	468	1,017	0.344	0.397
August	1,550	468	1,008	0.341	0.393
September	3,350	575	1,412	0.477	0.532
October	8,700	575	3,950	1.33	1.53
November	6,050	1,875	4,283	1.45	1.62
December	12,225	1,700	6,792	2.30	2.65

HUDSON RIVER AT FORT EDWARD DAM.

This station, which is located at the dam of the International Paper Company, was established by Geo. W. Rafter in 1895, in connection with Upper Hudson storage surveys. Since 1899 this station has been maintained by the U. S. Geological Survey and by this Department. The dam is of framed timber on slate rock foundation, and has but little leakage. The crest is straight, very nearly level, and 587.6 feet in length. Flash-boards are usually maintained on the dam from 15 inches to 18 inches in height. A record is kept of the height of flash-boards, and of the times of their setting and removal.

There are 62 water-wheels in the adjoining mill. These are nearly all of modern types which have been tested at the Holyoke flume. A record is kept of the daily run of each in hours, as well as of the working head, which is usually 18 feet. The discharge through the turbines is taken from diagrams expressing the flow as a function of the working head and number of wheel-hours run.

In the winter of 1896–1897, a flood spillway was cut around the south end of the dam, over which the water begins to flow whenever it reaches the level of the crest of the flash-boards. The profile of the spillway is very irregular and causes some uncertainty in the calculated flow during times of high water.

Whenever the flash-boards are off from the main dam, the flow is computed by means of coëfficients derived from the United States Geological Station experiments on a model dam of similar cross-section.

With the flash-boards on, the flow has been computed from Francis' well-known formula for the thin-edged weir. During the dry season, but little water passes over the dam, the entire flow being employed to drive the turbines.

The drainage area tributary to the Hudson above Fort Edward is 0.62 of that of the same stream above Mechanicville gaging station. The principal intervening tributaries are the Hoosic river and Batten kill.

During the navigation season water is diverted from the Hudson river for the supply of the Champlain canal at Glens Falls feeder dam, seven miles upstream from Fort Edward, and also at the Northumberland dam.

Mean Daily Discharge, Second-feet, of Hudson River at International Paper Co's Dam, at Fort Edward, N. Y

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	*1,584	1,859	2,042	5,140	13,560	2,645	2,026	1,177	1,235	*352	3,364	4,481
2	2,164	2,446	2,162	*5,303	14,995	3,167	*1,082	1,381	1,433	2,321	3,718	4,410
3	3,857	1,016	1,958	4,623	16,505	3,121	1,480	1,104	*1,407	1,896	3,656	*2,937
4	4,198	2,809	1,925	4,365	13,285	*1,842	352	1,029	524	2,608	3,469	3,917
5	4,198	*1,362	*2,308	4,134	10,695	3,160	1,815	1,219	1,297	2,667	*2,076	4,470
6	3,822	3,058	2,336	4,160	8,882	2,766	1,297	*650	1,318	3,907	3,354	2,573
7	3,583	1,952	2,071	6,308	*5,692	3,646	1,016	1,627	1,235	4,088	3,240	3,059
8	*1,885	1,444	1,618	7,329	7,219	4,198	1,130	1,156	1,171	*1,693	4,053	3,059
9	3,983	1,988	1,734	*9,824	5,509	4,480	*352	1,227	2,154	4,198	4,992	3,296
10	3,625	2,043	1,724	8,686	5,637	4,270	1,130	1,227	*2,137	4,136	4,755	*2,183
11	2,746	2,436	1,784	8,293	5,706	*2,388	1,487	1,311	2,988	3,009	4,755	3,956
12	2,574	*1,272	*1,146	8,293	5,316	4,212	1,352	1,240	2,718	3,007	*3,089	4,150
13	2,628	2,342	2,624	8,490	5,380	4,241	1,314	*352	2,331	2,649	5,230	6,151
14	2,509	1,457	1,751	9,976	*4,090	5,975	1,314	1,251	2,177	2,046	5,114	9,847
15	*1,851	2,188	2,033	10,801	4,017	5,989	1,299	1,016	2,175	*1,253	4,755	10,331
16	2,881	1,981	2,594	*12,003	3,978	5,497	*904	1,480	1,724	2,355	4,755	9,142
17	2,347	1,976	2,379	13,560	3,621	5,230	1,946	1,297	*596	2,054	4,481	*10,767
18	2,119	1,819	2,174	12,203	3,848	*5,117	1,335	1,111	1,287	2,133	4,198	8,694
19	1,601	*948	*1,707	10,934	5,376	4,073	1,655	1,292	1,459	4,951	*4,721	7,244
20	1,685	2,415	2,820	9,843	4,198	3,723	1,587	*352	1,535	6,843	5,230	6,151
21	2,752	1,651	2,063	9,976	*1,936	2,989	1,743	1,016	1,543	6,497	5,114	5,114
22	*1,306	2,425	2,180	9,757	4,285	2,895	1,971	1,016	1,759	*4,756	4,559	4,992
23	2,925	2,227	2,377	*10,206	2,916	2,263	*838	1,016	1,578	6,843	4,212	5,829
24	1,907	1,644	2,918	9,320	4,156	2,218	1,016	1,192	*582	6,497	4,198	*9,667
25	1,618	1,976	2,537	8,686	3,903	*1,186	1,335	1,156	1,182	6,843	4,198	7,644
26	2,519	*1,036	*1,896	9,976	4,875	2,509	1,152	740	1,131	6,151	*2,437	7,833
27	2,139	2,154	4,419	10,934	3,628	1,986	1,107	*352	1,182	5,230	4,042	8,908
28	2,262	2,505	6,659	12,203	*3,853	1,756	1,107	1,016	1,150	4,559	3,635	8,481
29	*1,416	......	5,380	13,560	3,587	1,016	810	1,262	1,107	*4,064	3,684	6,497
30	2,825	......	5,257	*16,224	2,864	1,874	*352	1,297	1,274	4,101	4,198	4,992
31	2,159	......	5,316	......	2,874	......	1,496	2,112	......	3,725	......	*6,737
Mean	2,570	1,944	2,642	9,170	6,012	3,348	1,252	1,119	1,513	3,788	4,109	6,049

* Sunday.

Monthly Discharge of Hudson River at International Paper Co.'s Dam, Fort Edward, N. Y.
[Drainage area, 2,800 square miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	4,198	1,306	2,570	0.918	1.06
February	3,058	948	1,944	0.694	0.723
March	6,659	1,146	2,642	0.944	1.09
April	16,224	4,134	9,170	3.28	3.66
May	16,505	1,936	6,012	2.15	2.48
June	5,989	1,016	3,348	1.20	1.34
July	2,026	352	1,252	0.447	0.515
August	2,112	352	1,119	0.400	0.461
September	2,988	524	1,513	0.540	0.602
October	6,843	352	3,788	1.35	1.55
November	5,230	2,076	4,109	1.47	1.65
December	10,767	2,183	6,049	0.216	0.248

HUDSON RIVER AT CORINTH, N. Y.

A gaging station was established by this Department on Hudson river at Corinth October 1, 1906. Readings are taken each morning and night by E. H. Bowker. The record is maintained in coöperation with the U. S. Weather Bureau. Measurements of the flow at this point have been made by the U. S. Geological Survey. These measurements are connected to a gage which is read by the International Paper Company. The mean daily discharge record at this station for 1911 is not at present available.

Mean Daily Gage Height, in Feet, of Hudson River at Corinth, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	0.55	0.40	0.25	1.85	4.95	0.65	0.25	0.10	0.35	0.55	1.00	1.40
2	0.85	0.50	0.20	1.75	5.55	0.85	0.15	0.10	0.25	0.65	1.00	1.25
3	1.00	0.40	0.20	1.40	5.75	0.75	0.10	0.20	0.25	0.80	0.95	1.20
4	1.30	0.40	0.20	1.30	5.25	0.55	0.05	0.15	0.15	0.90	0.90	1.05
5	1.30	0.50	0.20	1.45	4.35	0.50	—0.05	0.15	0.00	1.05	0.85	0.65
6	1.15	0.50	0.20	1.60	3.50	0.75	—0.10	0.20	0.15	1.40	0.85	0.65
7	0.95	0.50	0.20	2.80	3.15	1.10	0.00	0.20	0.35	1.55	0.95	0.90
8	0.75	0.60	0.30	3.20	2.45	1.35	—0.05	0.10	0.70	1.55	1.40	0.90
9	0.60	0.55	0.30	3.15	2.35	1.50	—0.10	0.20	0.85	1.50	1.80	0.80
10	0.50	0.45	0.30	3.15	1.90	1.15	0.00	0.10	1.10	1.40	1.90	0.85
11	0.40	0.35	0.25	3.30	2.15	1.20	0.00	0.10	0.95	1.15	1.95	0.80
12	0.40	0.30	0.25	3.25	2.05	1.35	—0.10	0.10	0.80	0.95	2.00	1.05
13	0.45	0.30	0.30	3.60	1.85	1.55	—0.05	0.10	0.70	0.75	1.85	1.70
14	0.50	0.30	0.40	4.00	1.35	1.85	0.00	0.00	0.50	0.54	2.00	2.70
15	0.50	0.30	0.40	4.40	0.95	1.95	0.10	0.00	0.40	0.60	1.95	3.55
16	0.50	0.25	0.30	4.85	1.25	2.25	0.10	0.00	0.30	0.50	1.80	3.20
17	0.50	0.20	0.30	4.80	0.90	1.60	0.30	0.00	0.35	0.45	1.55	3.15
18	0.50	0.20	0.40	4.45	1.05	1.30	0.20	0.10	0.40	1.15	1.80	2.95
19	0.45	0.20	0.40	4.25	1.65	1.35	0.15	0.15	0.25	2.45	2.00	2.60
20	0.40	0.20	0.35	4.15	1.30	0.95	0.10	0.20	0.15	2.60	2.00	2.25
21	0.40	0.20	0.30	4.05	0.95	0.85	0.05	0.15	0.15	2.55	1.90	1.95
22	0.50	0.20	0.30	3.95	1.20	0.75	0.10	0.10	0.20	2.50	1.75	1.90
23	0.50	0.20	0.40	3.80	0.75	0.60	0.05	0.10	0.20	2.45	1.55	2.50
24	0.35	0.20	0.40	3.95	1.30	0.50	0.05	0.00	0.20	2.55	1.40	3.30
25	0.30	0.25	0.50	4.05	0.90	0.35	0.10	0.00	0.20	2.50	1.30	3.55
26	0.30	0.30	0.55	4.05	2.60	0.15	0.10	0.05	0.25	2.50	1.15	3.35
27	0.30	0.30	1.10	4.45	2.45	0.15	0.10	0.00	0.20	2.00	1.00	3.05
28	0.45	0.30	1.85	4.75	2.00	0.35	0.15	—0.10	0.25	2.25	0.95	2.85
29	0.50	......	1.95	4.90	1.20	0.30	0.30	0.20	0.45	1.80	1.30	2.40
30	0.45	......	2.05	5.05	0.70	0.45	0.10	0.50	0.45	1.40	1.50	1.95
31	0.40	......	1.95	......	0.65	......	0.10	0.50	......	1.25	......	1.60

HUDSON RIVER AT THURMAN, N. Y.

This station is located at the Delaware and Hudson railroad bridge leading from Thurman to Warrensburg, about 950 feet below the highway bridge to Warrensburg and some 2,000 feet below the entrance of Schroon river into the Hudson. It was established, in coöperation with the New York State Water Supply Commission, September 22, 1907, to obtain general statistical and comparative data regarding the flow of the Hudson river.

There is a dam on Schroon river at Warrensburg, about three miles above the station. On the Hudson there is a dam at Luzerne about twelve miles below. During the winter months the discharge is affected by ice, and the station discontinued.

The datum of the chain gage attached to the bridge has remained the same during the maintenance of the station. Conditions for obtaining accurate discharge data are excellent and a very good rating curve has been developed. All measurements are made from the bridge.

The regimen of flow of the Upper Hudson, especially during the low-water season, has been considerably affected by storage in Indian Lake reservoir.

Information in regard to this station is contained in the annual reports of the State Water Supply Commission of New York.

Observation at this station discontinued November 30, 1910.

The following tables for 1910 supersede those published in State Engineer's report for that year.

Mean Daily Gage Height, in Feet, of Hudson River at Thurman, N. Y.

DAY.	Jan.	Feb.	Mar.	April.a	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	3.8	4.1	4.4	......	6.40	2.85	2.55	2.88	2.75	2.90	3.05	5.30
2	4.2	4.2	4.4	......	7.10	3.00	2.19	2.94	2.25	2.75	3.10	3.25
3	4.3	4.5	4.4	......	6.90	2.85	2.26	2.82	1.95	2.70	2.90	3.20
4	4.2	4.4	4.3	......	6.00	2.85	1.95	2.80	1.90	2.90	2.72	2.95
5	3.9	4.5	4.2	......	5.70	2.85	2.37	2.85	2.00	3.10	2.95	3.00
6	3.8	4.5	4.4	......	4.70	2.95	2.70	2.75	2.08	3.25	2.95	3.05
7	3.9	4.5	4.4	......	5.20	3.25	2.75	2.77	3.05	3.25	3.05	2.95
8	3.8	4.5	4.3	......	3.80	3.35	3.05	2.81	2.75	3.15	3.30	2.77
9	4.1	4.5	4.3	......	4.50	3.45	2.80	2.75	3.25	3.25	3.65	2.90
10	4.0	4.5	4.3	......	4.40	3.25	2.95	2.77	2.85	3.10	3.75	3.00
11	4.0	4.6	4.3	......	4.40	3.30	3.10	2.77	2.85	2.95	3.70	3.20
12	4.0	4.5	3.9	......	3.80	3.75	3.05	2.75	2.75	2.80	3.40	3.55
13	4.0	4.4	4.2	......	3.60	3.95	2.95	2.74	2.60	2.55	3.40	4.50
14	4.0	4.6	4.0	......	3.85	4.20	2.95	2.77	2.48	2.70	3.70	5.20
15	4.0	4.5	4.0	......	3.55	3.95	3.00	2.76	2.43	2.27	3.65	5.00
16	4.0	4.5	4.0	......	3.05	4.20	2.85	2.74	2.38	2.60	3.55	4.50
17	3.8	4.5	3.8	......	3.00	3.75	3.10	2.72	2.45	2.41	3.25	4.30
18	3.8	4.3	3.9	......	4.10	3.50	3.00	2.75	2.90	a	3.35	4.10
19	4.0	4.4	3.8	......	3.25	3.30	2.95	2.77	2.60	3.55	3.40	3.80
20	4.3	4.4	3.7	......	2.95	3.15	2.75	2.62	2.41	3.55	3.45	3.60
21	4.3	4.7	3.6	......	3.70	3.05	2.75	2.74	2.23	3.55	3.40	3.40
22	4.3	4.5	3.7	......	3.30	3.00	2.65	2.67	2.65	3.35	3.25	3.40
23	4.3	4.4	3.7	......	2.90	2.85	2.50	2.67	2.65	3.40	3.30	4.40
24	4.3	4.9	3.7	......	3.20	2.75	2.70	2.63	2.60	3.55	3.20	4.50
25	4.3	4.5	3.7	......	3.50	2.50	2.55	2.67	2.60	3.60	3.00	4.40
26	4.3	4.4	3.6	......	3.70	2.65	2.60	2.66	2.60	3.45	2.90	4.50
27	4.2	4.5	4.0	......	3.05	2.65	2.90	2.60	2.55	3.30	3.00	4.10
28	4.3	4.4	4.3	......	3.15	2.65	2.90	2.75	2.50	3.20	2.95	4.00
29	4.2	......	4.3	......	2.95	2.95	2.95	2.91	2.55	3.05	3.10	3.50
30	4.0	......	4.3	......	2.74	2.65	2.75	2.97	2.60	3.10	3.35	3.50
31	4.1	......	4.3	......	2.75	......	2.85	2.85	......	3.05	......	3.50

a No record.

Mean Daily Discharge, Second-feet, of Hudson River at Thurman, N. Y.

DAY.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.										
1	......	15,400	4,070	6,220	1,260	1,000	1,160	1,380	2,110	1,300
2	......	15,900	5,830	5,740	864	1,080	1,490	1,130	2,010	1,140
3	......	12,500	3,280	4,860	720	829	1,510	1,200	2,030	1,140
4	......	10,600	5,000	4,290	700	1,380	1,450	1,060	2,050	1,000
5	......	10,400	4,660	3,850	1,130	1,720	1,600	1,070	2,200	1,140
6	......	8,350	5,470	4,980	988	1,450	1,660	950	2,380	1,140
7	......	9,380	4,690	6,190	950	1,140	1,940	1,660	2,290	......
8	......	10,100	5,440	6,310	900	1,030	2,380	1,580	2,090	......
9	......	7,480	4,720	6,040	730	852	1,920	1,550	2,890	......
10	......	6,100	5,060	5,920	643	740	1,820	1,680	1,700	......
11	......	4,770	4,980	5,060	710	1,060	1,530	1,640	1,510	......
12	......	5,770	3,690	5,090	690	2,470	1,470	1,490	1,420	......
13	......	4,890	3,160	4,770	962	2,050	1,330	1,560	1,230	......
14	......	3,330	3,160	4,210	864	3,360	1,220	1,600	1,220	......
15	......	3,710	3,090	3,770	829	1,230	1,060	1,470	1,300	......
16	......	4,260	2,470	3,300	710	1,400	962	1,260	1,260	......
17	......	2,800	2,220	3,300	643	1,440	988	1,300	1,080	......
18	......	2,570	2,310	3,280	875	1,420	1,000	1,330	912	......
19	......	5,060	1,940	4,350	875	1,400	1,110	1,490	888	......
20	......	10,500	1,820	3,180	852	1,130	950	1,560	852	......
21	......	5,950	2,380	2,940	829	980	950	1,550	772	......
22	......	5,180	2,220	2,640	806	829	1,030	1,400	888	......
23	4,570	6,220	2,450	2,290	772	975	938	1,470	1,260	......
24	5,740	5,210	2,520	1,920	600	975	962	1,700	1,250	......
25	7,610	5,040	3,280	1,780	772	975	1,070	1,740	1,200	......
26	11,200	4,870	6,040	1,620	730	900	1,160	1,680	1,160	......
27	10,100	4,710	6,010	1,560	660	829	1,230	2,220	1,170	......
28	10,200	4,550	5,470	1,550	643	652	2,430	2,360	1,110	......
29	11,700	4,390	4,690	1,510	900	900	2,270	2,430	1,200	......
30	13,800	4,230	4,740	1,420	794	875	1,960	2,380	1,280	......
31	15,200	......	5,740	......	1,000	840	......	2,380	......	......

NOTE.— This table supersedes that for 1910 published on page 649 of the State Engineer's report for 1910.

Mean Daily Discharge, Second-feet, of Hudson River at Thurman, N. Y.

DAY.	Jan.a	Feb.a	Mar.a	April.a	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	.....	.....	.....	.....	11,100	1,380	788	978	845	1,000	1,190	6,780
2	.....	.....	.....	.....	13,200	1,660	509	1,050	485	845	1,260	1,500
3	.....	.....	.....	.....	12,600	1,380	554	912	358	800	1,000	1,410
4	.....	.....	.....	.....	9,920	1,380	375	890	340	1,000	818	1,060
5	.....	.....	.....	.....	9,020	1,380	632	945	375	1,260	1,060	1,120
6	.....	.....	.....	.....	6,020	1,560	945	845	407	1,500	1,060	1,190
7	.....	.....	.....	.....	7,520	1,840	1,010	863	1,190	1,500	1,190	1,060
8	.....	.....	.....	.....	3,480	2,040	1,460	901	845	1,340	1,580	863
9	.....	.....	.....	.....	5,440	2,260	1,070	845	1,500	1,500	2,300	1,000
10	.....	.....	.....	.....	5,150	1,840	1,060	863	945	1,260	2,510	1,120
11	.....	.....	.....	.....	5,150	1,940	1,260	863	945	1,060	2,400	1,410
12	.....	.....	.....	.....	3,480	2,960	1,190	845	845	890	1,770	2,080
13	.....	.....	.....	.....	2,990	3,460	1,060	836	715	678	1,770	4,430
14	.....	.....	.....	.....	3,610	4,140	1,060	863	626	800	2,400	6,480
15	.....	.....	.....	.....	2,870	3,640	1,120	854	591	495	2,300	5,880
16	.....	.....	.....	.....	1,760	4,140	945	836	558	715	2,080	4,430
17	.....	.....	.....	.....	1,660	2,960	1,260	818	605	577	1,500	3,870
18	.....	.....	.....	.....	4,290	2,370	1,120	845	1,000	600	1,680	3,340
19	.....	.....	.....	.....	2,180	1,940	1,060	863	715	2,080	1,770	2,620
20	.....	.....	.....	.....	1,560	1,640	845	732	577	2,080	1,880	2,190
21	.....	.....	.....	.....	3,230	1,460	845	836	475	2,080	1,770	1,770
22	.....	.....	.....	.....	2,290	1,380	758	775	758	1,680	1,500	1,770
23	.....	.....	.....	.....	1,470	1,140	640	775	758	1,770	1,580	4,150
24	.....	.....	.....	.....	2,070	1,010	800	740	715	2,080	1,410	4,430
25	.....	.....	.....	.....	2,750	740	678	775	715	2,190	1,120	4,150
26	.....	.....	.....	.....	3,230	890	715	766	715	1,880	1,000	4,430
27	.....	.....	.....	.....	1,760	890	1,000	715	678	1,580	1,120	3,340
28	.....	.....	.....	.....	1,960	890	1,000	845	640	1,410	1,060	3,090
29	.....	.....	.....	.....	1,560	1,300	1,060	1,010	678	1,190	1,260	1,980
30	.....	.....	.....	.....	1,200	890	845	1,080	715	1,260	1,680	1,980
31	.....	.....	.....	.....	1,220	.....	945	945	.....	1,190	.....	1,980

a Discharge affected by ice conditions.

Monthly Discharge of Hudson River at Thurman, N. Y.
[Drainage area, 1,550 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	....	....	900	0.581	0.67
February	....	....	1,200	0.774	0.81
March	15,200	....	6,500	4.19	4.83
April	15,900	2,570	6,810	4.39	4.90
May	6,040	1,820	3,950	2.55	2.94
June	6,310	1,420	3,800	2.45	2.73
July	1,260	600	819	0.528	0.61
August	3,360	652	1,220	0.787	0.91
September	2,430	938	1,420	0.916	1.02
October	2,430	950	1,590	1.03	1.19
November	2,890	772	1,490	0.961	1.07
December	....	....	(860)	(0.555)	(.64)
The year	15,900	600	2,550	1.65	22.32

NOTE.— This table supersedes that for 1910 published on page 650 of the State Engineer's report for 1910.

Monthly Discharge of Hudson River at Thurman, N. Y.
[Drainage area, 1,550 square miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	....	....	1,200	0.774	0.89
February	....	....	1,000	0.645	0.67
March	....	....	1,250	0.806	0.93
April	....	....	7,000	4.52	5.04
May	13,200	1,200	4,380	2.83	3.26
June	4,140	740	1,880	1.21	1.35
July	1,460	375	923	0.595	0.69
August	1,080	715	862	0.556	0.64
September	1,500	340	710	0.458	0.51
October	2,190	495	1,300	0.839	0.97
November	2,510	818	1,570	1.01	1.13
December	6,780	863	2,800	1.81	2.09

HUDSON RIVER AT NORTH CREEK, N. Y.

This station is located on the steel highway bridge at North Creek. It was established by the U. S. Geological Survey in coöperation with the New York State Water Supply Commission, September 21, 1907, to obtain general statistical and comparative data in regard to the flow of the Hudson.

North creek, a small tributary of the Hudson, enters from the right a short distance below this point.

The datum of the chain gage attached to the bridge has remained the same during the maintenance of the station. During the winter months the discharge is affected by the presence of ice. Conditions for obtaining accurate discharge data are good and a very good rating curve has been developed. All discharge measurements are made from the bridge.

The regimen of flow of the Upper Hudson, especially during the low-water season, has been considerably affected by storage in Indian Lake reservoir.

Information in regard to this station is contained in the annual reports of the United States Geological Survey.

Mean Daily Gage Height, in Feet, of Hudson River at North Creek, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	3.30	......	......	4.2	6.80	2.65	2.39	3.00	2.65	2.70	2.80	3.10
2	3.40	......	......	......	7.80	3.20	2.38	2.97	2.15	2.75	2.90	3.10
3	3.30	......	......	......	7.60	3.15	2.25	2.96	2.02	2.80	2.80	3.00
4	3.03	......	3.5	......	6.10	3.10	2.18	2.94	1.98	2.95	2.75	2.85
5	3.05	4.2	......	......	5.20	3.00	2.11	2.94	1.95	3.20	2.70	2.70
6	3.35	......	......	......	3.80	3.20	2.06	2.94	2.28	3.40	2.70	2.80
7	3.40	......	......	......	4.60	3.20	2.70	2.94	2.70	3.30	2.75	2.70
8	3.70	......	......	4.4	3.75	3.30	2.80	2.94	3.00	3.30	3.30	2.70
9	3.75	......	......	4.3	3.95	3.40	2.80	2.92	3.10	3.20	3.60	2.69
10	......	......	......	4.2	4.50	3.60	2.90	2.90	2.80	3.05	3.75	2.80
11	......	4.4	3.9	4.2	3.90	3.60	3.10	2.91	2.60	3.00	3.65	3.15
12	......	......	......	4.2	4.30	4.00	3.10	2.90	2.65	2.80	3.45	3.65
13	......	......	......	4.3	4.20	4.20	3.05	2.89	2.46	2.70	2.55	5.10
14	3.50	......	......	......	3.30	4.40	3.05	2.88	2.44	2.60	3.65	5.80
15	......	......	......	......	3.35	4.20	3.05	2.87	2.41	2.50	3.60	5.40
16	......	......	......	5.5	2.38	4.30	3.10	2.86	2.55	2.48	3.30	4.80
17	......	......	......	5.3	2.85	3.80	3.05	2.87	2.60	2.43	3.10	4.50
18	......	4.2	3.8	4.9	4.40	3.60	2.95	2.86	2.70	2.55	3.05	4.10
19	......	......	......	4.9	3.10	3.30	2.80	2.85	2.48	3.10	3.15	3.75
20	......	......	......	4.9	2.65	3.05	2.75	2.85	2.40	3.40	3.15	3.50
21	4.20	......	......	5.2	3.45	2.90	2.75	2.84	2.30	3.35	3.05	3.30
22	......	......	......	4.8	2.38	2.80	2.70	2.82	2.75	3.30	3.00	3.25
23	......	......	......	4.7	3.40	2.70	2.70	2.80	2.75	3.25	3.00	3.85
24	......	......	......	4.8	2.80	2.60	2.70	2.78	2.70	3.50	2.90	4.40
25	......	4.0	3.6	5.3	3.40	2.50	2.70	2.78	2.75	3.55	2.75	4.30
26	......	......	......	6.0	2.40	2.40	2.80	2.80	2.70	3.30	2.70	4.10
27	3.70	......	......	6.5	3.70	2.44	3.00	2.78	2.70	3.15	2.70	3.90
28	......	......	......	6.6	3.50	2.70	3.00	2.80	2.65	3.00	2.60	3.65
29	......	......	......	6.7	2.90	2.80	3.05	2.98	2.65	2.90	2.75	3.20
30	......	......	......	6.3	2.80	2.42	3.00	3.30	2.65	2.85	3.10	3.15
31	......	......	......	......	2.60	......	3.00	2.92	......	2.75	......	3.15

Mean Daily Discharge, Second-feet, of Hudson River at North Creek, N. Y.

DAY.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.										
1	......	9,790	2,080	3,380	474	810	940	840	1,550	790
2	......	9,640	2,600	2,920	454	754	1,120	682	1,480	780
3	......	7,080	3,140	2,210	430	772	1,040	602	1,480	840
4	......	5,290	4,630	1,890	412	1,010	1,100	562	1,450	810
5	......	4,860	4,260	1,800	382	1,350	1,100	562	1,080	745
6	......	4,850	3,250	2,240	364	1,100	1,310	554	1,420	700
7	......	5,020	3,330	3,230	340	940	1,550	1,280	1,420	682
8	......	5,730	3,140	3,660	340	718	1,650	1,200	1,160	......
9	......	3,580	4,260	3,420	325	610	1,480	1,100	990	......
10	......	2,570	2,710	2,870	310	700	1,380	1,150	890	......
11	......	3,330	3,010	2,480	295	1,320	1,160	1,200	840	......
12	......	3,580	1,770	2,550	594	2,240	990	1,120	870	......
13	......	2,710	1,350	2,360	594	1,590	930	1,120	790	......
14	......	2,260	1,500	2,000	570	1,250	910	1,100	736	......
15	......	890	1,280	1,800	530	890	870	1,010	691	......
16	......	2,050	1,040	1,580	562	1,220	790	940	655	......
17	......	628	910	1,430	562	1,100	736	910	610	......
18	......	1,450	810	1,680	562	1,100	700	910	530	......
19	......	2,000	890	1,840	530	1,040	682	1,080	488	......
20	......	6,380	910	1,550	530	970	664	1,100	400	......
21	......	3,140	1,170	1,450	530	840	664	1,080	330	......
22	......	1,740	1,250	1,220	538	840	700	1,120	810	......
23	2,540	2,710	1,420	990	530	840	673	1,160	840	......
24	2,540	1,320	1,280	870	530	790	655	1,220	840	......
25	5,200	1,740	1,740	772	530	736	646	1,200	840	......
26	7,220	1,120	3,760	682	523	709	691	1,280	830	......
27	6,180	3,880	5,080	655	502	700	735	1,620	870	......
28	5,320	1,480	3,440	610	546	700	1,300	1,770	810	......
29	6,740	1,080	2,660	546	790	691	1,350	1,920	790	......
30	8,650	5,020	2,320	495	745	664	1,040	1,800	800	......
31	9,430	......	2,710	......	810	655	......	1,770	......	......

NOTE.— Daily discharge is determined from a well-defined rating curve. This table supersedes that for 1910 published on page 653 of the State Engineer's report for 1910.

Mean Daily Discharge, Second-feet, of Hudson River at North Creek, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	......	700	600	700	8,620	570	394	890	570	610	700	990
2	......	700	600	700	11,600	1,100	388	860	268	655	790	990
3	......	700	600	700	11,000	1,040	315	850	213	700	700	890
4	......	700	600	700	6,690	990	281	830	198	840	655	745
5	......	700	600	900	4,520	890	250	830	188	1,100	610	610
6	......	700	600	1,200	1,920	1,100	229	830	330	1,350	610	700
7	......	700	600	1,700	3,290	1,100	610	830	610	1,220	655	610
8	......	700	600	1,900	1,840	1,220	700	830	890	1,220	1,220	610
9	......	700	600	2,100	2,160	1,350	700	810	990	1,100	1,620	602
10	......	700	625	2,300	3,100	1,620	790	790	700	940	1,840	700
11	......	709	650	2,500	2,080	1,620	990	800	530	890	1,700	1,040
12	......	700	675	2,570	2,740	2,240	990	790	570	700	1,420	1,700
13	......	700	675	2,740	2,570	2,570	940	781	436	610	1,550	4,300
14	......	700	675	3,000	1,220	2,920	940	772	424	530	1,700	5,930
15	......	700	675	4,000	1,280	2,570	940	763	406	460	1,620	4,970
16	......	700	675	5,200	388	2,740	990	754	495	448	1,220	3,680
17	......	700	675	4,740	745	1,920	940	763	530	418	990	3,100
18	......	675	675	3,880	2,920	1,620	840	754	610	495	940	2,400
19	728	675	675	3,880	990	1,220	700	745	448	990	1,040	1,840
20	730	675	700	3,880	570	940	655	745	400	1,350	1,040	1,480
21	730	675	700	4,520	1,420	790	655	736	340	1,280	940	1,220
22	730	675	700	3,680	388	700	610	718	655	1,220	890	1,160
23	730	660	700	3,480	1,350	610	610	700	655	1,160	890	2,000
24	700	660	700	3,680	700	530	610	682	610	1,480	790	2,920
25	700	660	725	4,740	1,350	460	610	682	655	1,550	655	2,740
26	700	660	750	6,430	400	436	700	700	610	1,220	610	2,400
27	700	600	750	7,770	1,770	424	890	682	610	1,040	610	2,080
28	700	661	800	8,050	1,480	610	890	700	570	890	530	1,700
29	700	......	800	8,330	790	700	940	870	570	790	655	1,100
30	700	......	775	7,220	700	412	890	1,220	570	745	990	1,040
31	700	......	750	......	530	......	890	810	......	655	......	1,040

Monthly Discharge of Hudson River at North Creek, N. Y.

[Drainage area, 804 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	....	....	593	0.738	0.85
February	....	....	677	0.842	0.88
March	9,430	....	3,640	4.53	5.22
April	9,790	628	3,560	4.43	4.94
May	5,080	810	2,380	2.96	3.41
June	3,660	495	1,840	2.29	2.56
July	810	295	508	0.632	0.73
August	2,240	610	956	1.19	1.37
September	1,650	646	986	1.23	1.37
October	1,920	554	1,130	1.41	1.63
November	1,550	330	910	1.13	1.26
December	....	....	570	0.709	0.82
The year	9,790	295	1,480	1.84	25.04

NOTE.— This table supersedes that for 1910 published on page 654 of the State Engineer's report for 1910.

Monthly Discharge of Hudson River at North Creek, N. Y.
[Drainage area, 807 square miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	....	....	750	0.930	1.07
February	....	....	685	0.849	0.88
March	....	....	675	0.836	0.96
April	8,330	....	3,570	4.42	4.93
May	11,600	388	2,620	3.25	3.75
June	2,920	412	1,230	1.52	1.70
July	990	229	706	0.875	1.01
August	1,220	682	791	0.980	1.13
September	990	188	522	0.647	0.72
October	1,550	418	924	1.140	1.31
November	1,840	530	1,010	1.250	1.40
December	5,930	602	1,850	2.290	2.64

HOOSIC RIVER.

Description.

Hoosic river has its sources on the west slope of the Hoosac mountains in Vermont and Massachusetts. Two head branches, one flowing southward, the other northward along the west slope of this range, unite at North Adams, Mass., and the stream then flows northwestward, entering the Hudson three miles north of Mechanicville. Above Buskirk the drainage basin is rugged and precipitous, the distribution of tributaries affording rapid concentration of the run-off from the steep rock slopes. The ridges are sparsely wooded. The soil in the valleys is generally firm and tenacious. The general elevation of the valley at the junction of the head waters is 1,000 feet. Numerous dams, affording power for textile, agricultural implement, and other industries, are scattered throughout the length of the stream from North Adams to Schaghticoke. The drainage basin contains no important lakes and but little storage in reservoirs.

Hoosic River at Schaghticoke, N. Y.

The gaging records for this station have been furnished this Department by the Schenectady Power Co., which maintains the station in connection with its hydro-electric plant at Schaghticoke.

Mean Daily Discharge, Second-feet, of Hoosic River at Schaghticoke, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	613	601	706	2,199	1,030	358	277	69	393	567	1,481	1,064
2......	613	636	567	1,516	1,585	335	150	60	300	528	1,203	1,273
3......	1,053	270	543	1,169	2,280	347	57	92	138	856	983	1,307
4......	3,761	138	173	1,388	2,222	277	300	17	335	729	729	1,307
5......	3,865	798	532	1,030	1,551	138	92	39	11	1,238	914	1,272
6......	1,342	463	231	2,453	1,168	312	173	92	243	1,435	729	891
7......	1,111	370	243	5,162	949	335	162	11	289	1,053	937	750
8......	937	370	266	5,277	821	370	104	69	509	1,365	1,018	706
9......	772	486	289	3,854	604	439	69	150	567	960	983	752
10......	1,018	381	266	3,229	682	439	81	46	2,210	1,064	972	717
11......	1,076	567	358	2,893	601	243	81	56	1,203	787	740	617
12......	868	347	381	2,036	682	185	115	46	914	752	625	717
13......	1,122	115	243	1,805	531	553	115	92	416	705	937	729
14......	880	347	347	1,921	666	2,083	115	......	567	590	1,041	891
15......	868	451	532	3,344	462	1,527	......	23	462	625	613	775
16......	729	300	2,986	4,166	520	952	138	81	381	370	682	925
17......	463	289	1,724	2,972	380	775	46	127	671	497	1,099	1,377
18......	479	300	983	2,152	509	740	23	162	300	439	1,064	1,273
19......	405	902	800	1,724	509	416	69	104	462	3,217	1,180	1,504
20......	312	613	752	1,713	671	578	81	138	405	6,284	1,250	1,308
21......	648	370	902	1,712	763	463	92	104	370	2,118	1,840	1,087
22......	358	405	868	1,550	486	360	173	46	277	1,354	1,226	1,076
23......	520	281	1,932	1,273	486	486	101	34	358	1,203	925	1,576
24......	474	405	2,048	879	486	324	......	115	347	2,708	1,087	2,441
25......	381	358	1,099	1,342	405	243	127	81	243	2,988	1,226	2,450
26......	393	520	983	1,493	440	162	162	57	358	1,840	983	1,747
27......	358	937	1,111	1,435	439	416	118	139	266	1,978	798	1,875
28......	1,805	960	5,620	1,250	405	220	150	127	300	1,875	1,215	1,921
29......	2,384	......	6,588	1,562	220	358	127	370	312	1,724	1,134	1,496
30......	3,784	......	4,305	1,168	405	266	185	1,226	439	1,550	1,086	995
31......	1,192	......	3,657	......	104	......	46	520	......	1,481	......	1,018
Mean...	1,116	464	1,356	2,189	747	493	122	143	468	1,448	1,023	1,221

Monthly Discharge of Hoosic River at Schaghticoke, N. Y.
[Drainage area, 635 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	3,865	312	1,116	1.76	2.03
February	960	115	464	0.731	0.761
March	6,588	173	1,356	2.14	2.47
April	5,277	879	2,189	3.45	3.85
May	2,280	104	747	1.18	1.36
June	2,083	138	493	0.776	0.866
July	300	23	122	0.192	0.221
August	1,226	11	143	0.225	0.259
September	2,210	11	468	0.737	0.822
October	6,284	370	1,448	2.28	2.63
November	1,840	613	1,023	1.61	1.80
December	2,450	617	1,221	1.92	2.21

HOOSIC RIVER AT JOHNSONVILLE, N. Y.

The Schenectady Power Co. maintains gaging records in connection with its hydro-electric plant at Johnsonville and has furnished this Department with the records for this station.

Mean Daily Discharge, Second-feet, of Hoosic River at Johnsonville, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	552	541	636	1,980	927	323	250	63	354	511	1,333	958
2	552	573	511	1,365	1,427	302	135	54	270	476	1,083	1,146
3	948	243	489	1,053	2,052	313	52	83	125	771	885	1,177
4	3,385	125	156	1,250	2,000	250	270	16	302	657	657	......
5	3,497	719	499	927	1,396	125	83	35	10	1,115	823	1,145
6	1,208	417	208	2,208	1,052	281	156	83	219	1,292	657	802
7	1,000	333	219	4,646	855	302	146	10	261	948	844	675
8	844	333	240	4,750	739	333	94	63	459	1,229	917	636
9	695	438	261	3,469	625	396	63	135	511	864	885	......
10	917	343	240	2,909	614	396	73	42	1,989	958	......	646
11	969	511	323	2,604	541	219	73	51	1,083	709	666	566
12	782	303	343	1,833	614	167	104	42	823	677	563	646
13	1,010	104	219	1,625	590	498	104	83	375	635	......	657
14	792	313	313	1,729	740	1,875	104	......	511	531	937	802
15	782	406	499	3,010	416	1,375	......	21	416	563	552	698
16	657	270	2,688	3,750	468	857	125	73	343	333	......	833
17	417	261	1,552	2,675	342	698	42	115	604	448	990	1,240
18	432	270	885	1,937	459	666	21	146	270	396	958	1,146
19	365	812	720	1,552	459	375	63	94	406	2,896	1,062	1,354
20	281	552	677	1,542	604	521	73	125	365	5,656	1,125	1,178
21	584	333	812	1,541	687	417	83	94	333	1,907	1,656	979
22	323	365	782	1,395	438	324	156	42	250	1,219	1,104	969
23	468	208	1,739	1,146	438	438	......	31	323	1,083	833	1,419
24	427	365	1,844	792	438	292	......	104	313	2,438	978	2,197
25	343	323	990	1,208	365	219	115	73	219	2,890	1,104	2,208
26	354	468	885	1,344	400	146	146	52	323	1,656	885	1,573
27	323	844	1,000	1,292	396	375	107	126	240	1,781	710	1,688
28	1,625	864	5,058	1,120	365	198	135	115	270	1,688	1,094	1,729
29	2,146	......	5,927	1,406	198	323	115	333	281	1,552	1,021	1,354
30	3,406	......	3,875	1,052	365	240	167	1,100	396	1,395	978	896
31	1,073	......	3,292	......	94	......	42	468	......	1,333	......	917
Mean	1,005	416	1,222	1,970	681	441	111	129	421	1,310	938	1,112

Monthly Discharge of Hoosic River at Johnsonville, N. Y.
[Drainage area, 609 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	3,497	281	1,005	1.65	1.90
February	864	104	416	0.683	0.711
March	5,927	156	1,222	2.01	2.32
April	4,750	792	1,970	3.25	3.63
May	2,052	94	681	1.12	1.29
June	1,875	125	441	0.724	0.808
July	270	21	111	0.182	0.210
August	1,100	10	129	0.212	0.244
September	1,989	10	421	0.691	0.771
October	5,656	333	1,310	2.15	0.248
November	1,656	552	938	1.54	1.72
December	2,208	566	1,112	1.83	0.211

HOOSIC RIVER ABOVE EAGLE BRIDGE, N. Y.

August 13, 1910, a chain-gage was established on the left bank of Hoosic river about one mile upstream from Eagle Bridge and one-half mile below the mouth of Walloomsac river. This gage was installed to replace the gaging station at Buskirk. The gage is of the chain-and-weight type and is supported by a cantilever arm 14 feet in length securely fastened to two trees a short

distance back from the edge of the bank, which is about 12 feet above low water at this point. Length of chain and weight, 18.62 feet. The gage is referred to two bench-marks: No. 1, spike in blaze on upstream side of walnut tree, 8 inches in diameter and about 10 feet downstream from the gage, elevation 17.565; No. 2, spike in small elm stump, 2 feet high and 2 feet upstream from gage, elevation 17.688. Both elevations are above zero of gage.

The dam of Walter A. Wood & Company, located at Hoosick Falls, about two miles upstream from the gage, has considerable influence on the flow of the stream during low water. Walloomsac river, also slightly controlled by power developments, enters Hoosic river about 1½ miles below the dam at Hoosick Falls.

The channel is fairly straight for 900 to 1,000 feet upstream from the gage and for about the same distance downstream. The left bank, in general, is high and wooded, while the right bank is low and subject to overflows in high water. About 1,000 feet downstream from the gage, the banks are high on both sides and seldom flooded, except during periods of extreme high water, usually caused by temporary ice jams at the railroad bridge about three-fourths mile downstream.

Mean Daily Gage Height, in Feet, of Hoosic River above Eagle Bridge, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	9.3	8.35	8.15	9.22	9.3	7.6	7.13	7.18	7.35	8.08	8.98	9.10
2......	10.9	8.15	7.75	8.65	10.55	7.55	7.25	7.10	7.35	8.52	8.65	8.88
3......	12.45	7.95	7.8	8.60	9.65	7.55	7.2	7.02	7.13	8.40	8.55	8.62
4......	11.15	8.3	7.75	8.55	9.15	7.2	7.1	7.05	7.20	8.48	8.42	8.62
5......	9.45	8.4	7.70	9.35	8.85	7.55	7.08	6.77	7.10	9.48	8.28	8.30
6......	9.15	7.95	7.75	11.10	8.70	7.65	7.05	6.80	7.40	8.70	8.40	8.35
7......	9.2	7.95	7.7	12.2	8.4	7.85	7.12	7.15	7.87	9.05	8.68	8.35
8......	8.78	8.1	7.65	10.8	8.4	7.8	7.15	7.18	8.08	8.88	8.75	8.35
9......	9.3	7.95	7.7	10.45	8.3	7.6	6.85	7.15	7.53	8.68	8.48	8.35
10......	8.55	8.0	7.65	10.0	8.15	7.4	7.08	6.90	9.78	8.50	8.45	8.25
11......	8.4	7.9	7.7	9.65	8.05	7.25	7.25	7.08	8.57	8.32	8.38	8.32
12......	......	7.95	7.6	9.6	8.00	7.72	6.90	6.77	8.28	8.20	8.20	8.5
13......	......	7.9	7.7	9.65	8.10	9.72	7.08	6.78	7.90	8.18	9.18	8.55
14......	......	......	8.0	10.38	8.05	9.7	6.98	6.65	7.78	7.92	8.8	8.40
15......	......	......	10.4	12.2	8.15	8.8	6.70	6.77	7.67	7.85	8.75	8.40
16......	8.0	......	8.8	11.05	7.95	8.5	6.72	6.9	7.97	7.95	8.75	8.90
17......	7.85	......	8.15	10.15	7.85	8.35	7.15	7.05	7.95	7.90	8.52	9.30
18......	7.95	8.75	8.15	9.65	7.8	8.0	7.12	7.02	7.82	7.95	9.48	9.28
19......	8.0	8.6	8.00	9.6	7.9	7.95	7.03	7.18	7.83	12.45	9.92	8.95
20......	8.0	8.2	8.2	9.35	8.55	7.98	7.08	6.95	7.68	10.85	9.32	8.60
21......	8.05	8.25	8.00	9.3	8.05	7.73	6.95	7.00	7.67	9.9	9.22	8.50
22......	8.0	7.78	8.3	9.4	7.9	7.75	7.00	6.75	7.50	10.88	8.98	8.58
23......	7.95	7.70	9.60	9.25	7.8	7.6	6.80	6.80	7.63	11.62	8.72	11.60
24......	7.95	7.75	8.5	9.05	7.65	7.55	7.08	6.95	7.62	10.58	8.92	10.40
25......	7.8	7.75	8.15	9.3	7.7	7.28	7.58	6.73	7.63	9.75	9.10	9.75
26......	7.8	8.0	8.4	9.6	7.75	7.57	7.20	6.85	7.47	9.45	8.6	9.55
27......	8.1	8.8	11.45	9.65	7.55	7.58	7.12	7.05	7.52	9.20	8.75	9.75
28......	12.65	8.5	13.0	9.8	7.52	7.62	7.00	7.30	7.55	8.98	8.72	9.50
29......	9.25	......	10.0	9.65	7.5	7.52	7.30	8.97	7.62	8.78	10.18	8.85
30......	9.22	......	11.52	9.45	7.25	7.48	7.12	8.30	8.10	8.68	9.42	8.70
31......	8.05	......	9.85	......	7.4	......	7.20	7.75	......	8.60	......	8.55

Current-meter Discharge Measurements of Hoosic River at Eagle Bridge, N. Y.

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Corrected discharge.
1911.			*Sq. ft.*	*Feet.*	*Sec.-ft.*
Jan. 30 *a*	F. J. Shuttleworth	9.26	....	....	*b* 1,460
Mar. 15	Hoyt, Cullings, Preston	8.82	....	....	*b* 852
June 16	W. G. Hoyt	8.54	....	....	*b* 972
Aug. 23 *c*	F. Weber	7.20	202	100	197
Aug. 23 *c*	F. Weber	6.95	177	94	120
Sept. 26 *c*	G. H. Canfield	7.59	154	125	348
Sept. 26 *c*	W. G. Hoyt	7.38	135	126	263

a River free of ice.
b Discharge measurement made at highway bridge, 2 miles below gage; discharge corrected for flow in Owlkill creek.
c Discharge measurement made by wading near gage.

BATTEN KILL.

BATTEN KILL NEAR GREENWICH, N. Y.

This station is located at the mill of the Bosson Leather Board Company, about four miles west of Greenwich. A record is kept of the amount the head gates are open, with the head on these openings, and of the head on the crest of the timber dam belonging to the company.

The discharge is computed from rating curves for the flow over the dam, considered as a weir, and for the gate openings as orifices. Coëfficients for the gate openings were determined experimentally by the current-meter measurements.

This station was established in April, 1911.

Mean Daily Discharge, Second-feet, of Batten Kill near Greenwich, N. Y.

DAY.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.									
1	......	556	146	75	208	131	......	394	433
2	......	751	316	73	29	122	315	394	428
3	......	686	203	308	77	82	350	394	275
4	......	410	122	......	97	144	345	388	381
5	......	340	199	324	101	103	320	......	418
6	......	335	197	235	70	151	335	350	433
7	......	150	218	60	103	325	350	382	401
8	......	374	219	180	44	330	320	394	393
9	......	359	213	85	38	314	335	394	387
10	......	359	216	207	63	380	335	394	286
11	......	343	242	242	168	285	325	394	378
12	......	333	259	65	89	230	315	......	378
13	......	338	353	94	70	183	183	441	396
14	......	191	385	106	65	294	307	433	394
15	......	314	385	46	147	160	......	427	339
16	......	299	385	32	88	238	405	422	372
17	......	292	370	43	98	......	190	422	......
18	......	251	364	76	125	324	187	402	277
19	422	279	353	52	96	314	679	368	296
20	414	308	319	55	......	198	589	433	325
21	410	164	307	34	62	343	464	428	287
22	409	273	243	148	167	234	256	416	293
23	332	186	156	......	77	249	439	416	585
24	422	145	268	131	114	......	434	428	......
25	419	138	80	65	132	205	410	428	......
26	448	290	351	108	110	205	376	......	......
27	472	223	193	136	47	313	371	416	......
28	536	174	192	107	81	173	394	423	......
29	605	133	201	72	267	43	255	433	......
30	496	207	192	16	340	198	365	433	......
31	......	323	......	314	278	......	387	......	......
Mean	......	307	255	120	115	224	356	409	......

Monthly Discharge of Batten Kill near Greenwich, N. Y.
[Drainage area, 444 square miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
May	751	133	307	0.691	0.797
June	385	80	255	0.574	0.640
July	324	16	120	0.270	0.311
August	340	29	115	0.259	0.299
September	380	43	224	0.505	0.563
October	679	183	356	0.802	0.925
November	441	350	409	0.921	1.030

SACANDAGA RIVER.

Description.

Sacandaga river is one of the larger tributaries of the upper Hudson. It drains extensive portions of the southeast slope of the Adirondack region as well as a portion of the plateau lying north of Mohawk river and south of the Adirondack mountains. The head waters of the stream rise in the slopes surrounding Lake Pleasant, Sacandaga and Piseco lakes. Above Northville the drainage basin is rugged and almost completely forest-covered. From Northville to Conklingville the stream winds through a sandy valley flanked by steep slopes. The width of this valley averages about one mile from Northampton to Conklingville. Above Northampton is an extensive flat lying at elevation of about 740 feet. This flat is drained by Mayville, Vly and Hann's creeks, and contains extensive swamp areas. From Northville to Conklingville, a distance along the general course of the stream of about 22 miles, there is very little fall. The elevation at Conklingville is about 720 feet. Sacandaga river enters Hudson river at Luzerne at elevation about 540 feet. The distance from Conklingville to Luzerne is about seven miles along the general course of the stream.

Sacandaga River near Hadley, N. Y.

This station is located at the steel highway bridge about 2½ miles west of Hadley. It was established September 13, 1907, by the N. Y. State Water Supply Commission in coöperation with the U. S. Geological Survey, to obtain general and statistical

data regarding the flow of the Sacandaga river, which has important storage and power possibilities.

The nearest dam is at Conklingville, about 3½ miles upstream, and is partially washed away and not used at present. Occasional log jams occur in the vicinity of this station, causing backwater. The discharge is somewhat affected by ice during the winter months.

The datum of the chain gage attached to the bridge has remained the same during the maintenance of the station. Conditions for making accurate discharge measurements are fair, except during the existence of log jams. The rating curve is fairly well developed. Discharge measurements are made from the bridge.

Information in regard to this station is contained in the annual reports of the U. S. Geological Survey.

Current-meter Discharge Measurement of Sacandaga River at Upper Bridge, near Hadley, N. Y

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Corrected discharge.
1910.			*Sq. ft.*	*Feet.*	*Sec.-ft.*
Dec. 30 *a*...	F. J. Shuttleworth..............	4.12	414	214	741

a Measurement made under partial ice cover.

Mean Daily Discharge, Second-feet, of Sacandaga River at Upper Bridge, near Hadley, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1......	......	1,540	8,350	15,000	4,930	3,930	606	340	250	1,830	966	630
2......	......	1,250	13,300	15,200	4,710	3,340	534	370	300	1,490	894	590
3......	......	1,250	15,800	14,000	4,160	3,320	520	388	330	1,190	782	576
4......	......	1,160	12,500	11,100	4,220	3,010	490	400	340	930	1,060	555
5......	......	1,080	11,700	8,050	4,460	2,940	460	630	412	815	1,570	520
6......	......	960	10,400	6,660	4,710	4,620	412	815	490	654	2,020	490
7......	......	750	8,890	6,290	4,310	7,040	400	990	630	606	2,300	......
8......	......	750	7,840	5,760	4,220	6,770	370	715	670	590	2,120	......
9......	......	725	7,240	5,420	3,930	6,850	340	576	576	555	1,880	......
10......	......	805	7,040	5,260	3,460	6,110	340	520	508	534	1,740	......
11......	......	700	6,660	4,020	2,860	6,180	340	490	490	520	1,540	......
12......	......	605	6,110	3,460	2,760	5,940	315	715	460	508	1,410	......
13......	......	640	5,590	3,270	2,230	6,110	315	630	412	490	1,340	......
14......	......	685	5,420	3,060	2,160	5,760	290	490	448	508	1,260	......
15......	......	628	5,090	2,690	1,960	5,090	290	460	534	490	1,230	......
16......	......	628	4,770	2,230	1,920	4,020	290	448	508	460	1,150	......
17......	......	628	4,460	2,020	1,740	3,370	300	412	472	430	1,090	......
18......	......	560	4,060	3,590	1,830	3,620	340	430	448	430	966	......
19......	......	560	3,500	5,420	1,570	3,460	330	460	412	400	870	......
20......	......	599	2,690	6,180	1,710	3,370	290	490	388	400	815	......
21......	716	628	2,230	6,470	2,020	3,010	290	460	352	370	760	......
22......	3,000	805	3,060	5,940	2,230	2,460	300	400	340	388	742	......
23......	6,000	930	4,060	5,260	2,860	1,960	300	388	315	460	688	......
24......	4,020	1,440	5,260	4,620	2,940	1,660	290	352	290	508	654	......
25......	3,200	1,340	6,470	4,400	3,370	1,230	290	340	340	576	590	......
26......	2,500	1,340	7,840	4,520	5,260	930	290	315	388	606	654	......
27......	2,000	1,500	9,960	5,090	6,470	848	315	290	490	654	670	......
28......	1,800	3,310	10,800	5,940	5,690	782	340	290	1,830	715	715	......
29......	1,700	......	11,700	5,940	5,830	715	370	290	2,570	1,120	688	......
30......	1,600	......	12,700	5,160	4,930	670	400	270	2,340	1,260	670	......
31......	1,500	......	13,600	......	4,310	......	352	258	......	1,090	......	......

NOTE.— This table supersedes that for 1910, published on page 668 of the State Engineer's report for 1910.

Monthly Discharge of Sacandaga River at Upper Bridge, near Hadley, N. Y.

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	6,000	....	1,120	1.07	1.23
February	3,310	560	1,020	0.971	1.01
March	15,800	2,230	7,710	7.34	8.46
April	15,200	2,020	6,070	5.78	6.45
May	6,470	1,570	3,540	3.37	3.88
June	7,040	670	3,640	3.47	3.87
July	606	290	358	0.341	0.39
August	990	258	465	0.443	0.51
September	2,570	250	611	0.582	0.65
October	1,830	370	696	0.663	0.76
November	2,300	590	1,130	1.08	1.20
December	....	....	543	5.17	0.60

NOTE.— This table supersedes that for 1910, published on page 669 of the State Engineer's report for 1910.

SACANDAGA RIVER CABLE STATION, NEAR HADLEY, N. Y.

This station is located on the Sacandaga river about 1 mile above the mouth of the stream and 6 miles by river below the proposed dam at Conklingville. It was established November 12, 1910, to obtain data applicable to the proposed storage on this stream.

The river channel at this point was cleared of boulders to make the cross-section comparatively smooth and permanent, and a ⅝-inch galvanized wire rope, from which discharge measurements are made, was stretched across the stream.

About 30 feet downstream from the cable and on the left bank, a concrete well was built, 3 feet square, inside dimensions. The bottom of the well is about 2 feet below low water and 12 feet below ground surface; it is connected with the river by a 4-inch cast iron water pipe, 48 feet in length, having its intake end pointing downstream and protected by a fine wire screen. Inside of the well and securely bolted to the side is a bed plank, to which is fastened a staff gage with its zero at elevation 573.36, referred to a U. S. Geological Survey aluminum tablet set in the foundation wall of the Union Bag and Paper Company's mill at Hadley. On the top of the well is a concrete shelter 6 feet high and 3 feet square, inside dimensions, for protecting the recording gage.

Mean Daily Gage Height, in Feet, of Sacandaga River at Cable Station, near Hadley, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	4.9	5.3	4.5	5.6	7.2	3.9	3.3	2.68	3.1	3.45	4.7	5.3
2......	5.0	5.1	4.25	5.5	7.2	4.2	3.2	2.63	2.94	3.65	4.8	5.1
3......	5.4	5.4	4.3	5.2	7.2	4.05	3.2	2.57	3.0	4.05	4.7	4.9
4......	6.6	4.9	4.15	5.1	7.1	3.85	3.15	2.52	3.1	4.15	4.6	4.6
5......	7.3	4.7	4.15	4.9	6.8	3.7	3.05	2.49	3.1	4.5	4.45	4.15
6......	7.2	5.3	4.0	5.1	6.4	3.9	3.0	2.49	3.05	4.7	4.3	4.15
7......	7.2	5.4	4.1	5.7	6.1	4.35	2.96	2.46	3.75	4.6	4.5	4.3
8......	7.0	5.1	4.0	6.0	5.6	4.8	2.92	2.51	3.9	4.7	5.1	4.2
9......	6.5	4.6	3.95	6.4	5.4	4.9	2.88	2.6	3.95	4.8	5.5	4.15
10......	6.4	4.7	3.8	6.8	5.0	4.6	2.87	2.56	4.35	4.7	5.5	4.2
11......	6.1	4.35	3.85	6.8	4.8	4.35	2.82	2.58	4.45	4.45	5.4	4.45
12......	5.7	4.5	3.8	6.7	4.7	4.2	2.8	2.67	4.15	4.3	5.3	5.0
13......	5.6	4.2	3.8	6.6	4.6	4.6	2.76	2.52	3.95	4.1	5.5	5.8
14......	5.5	4.2	3.95	6.8	4.5	5.4	2.72	2.48	3.8	3.95	5.6	6.2
15......	5.1	4.35	4.1	7.1	4.15	5.5	2.7	2.44	3.55	3.85	5.5	6.3
16......	5.4	4.45	4.4	7.5	4.4	5.3	2.68	2.4	3.45	3.7	5.3	6.2
17......	6.0	4.2	4.6	7.6	4.3	5.0	2.71	2.41	3.45	3.65	5.0	6.3
18......	6.4	4.0	4.35	7.4	4.3	4.7	2.71	2.4	3.4	4.3	5.0	6.3
19......	6.6	4.2	4.35	7.0	4.3	4.35	2.72	2.4	3.25	6.2	5.6	6.2
20......	5.0	5.0	4.2	6.8	4.45	4.1	2.74	2.41	3.15	6.4	5.7	5.8
21......	5.5	4.9	4.15	6.8	4.3	3.9	2.71	2.41	3.05	6.5	5.6	5.4
22......	5.1	4.6	4.1	6.7	4.0	3.7	2.67	2.4	3.05	6.4	5.4	5.2
23......	5.1	4.6	4.25	6.6	4.3	3.6	2.62	2.39	3.0	6.3	5.0	5.9
24......	4.7	4.3	4.5	6.5	4.35	3.5	2.6	2.38	3.0	6.4	4.8	6.6
25......	4.6	4.25	4.5	6.4	4.5	3.4	2.61	2.39	3.0	6.4	4.8	6.9
26......	4.4	4.2	4.45	6.5	4.5	3.4	2.67	2.4	3.0	6.1	4.6	6.8
27......	4.3	4.2	5.1	6.7	4.45	3.35	2.7	2.4	2.97	5.8	4.6	6.6
28......	4.6	4.6	6.1	6.9	4.3	3.6	2.68	2.6	2.95	5.3	4.5	6.4
29......	5.2	......	6.2	7.1	3.95	3.6	2.69	3.1	2.98	5.0	4.8	5.9
30......	......	......	6.2	7.2	4.15	3.45	2.69	3.6	3.15	4.8	5.3	5.5
31......	5.6	......	5.8	......	3.95	......	2.69	3.3	......	4.6	......	5.4

Mean Daily Discharge, Second-feet, of Sacandaga River at Cable Station, near Hadley, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	750	750	750	3,680	7,880	1,060	557	232	435	662	2,050	3,080
2......	800	750	750	3,470	7,880	1,380	494	212	351	821	2,210	2,710
3......	1,000	750	750	2,890	7,880	1,220	494	189	381	1,220	2,050	2,370
4......	1,800	750	750	2,710	7,580	1,010	464	171	435	1,330	1,900	1,900
5......	2,500	750	750	2,370	6,690	864	408	161	435	1,760	1,700	1,330
6......	2,000	750	750	2,710	5,590	1,060	381	161	408	2,050	1,500	1,330
7......	1,800	750	700	3,900	4,840	1,570	361	151	910	1,900	1,760	1,500
8......	1,500	750	700	4,600	3,680	2,210	341	168	1,060	2,050	2,710	1,380
9......	1,200	750	700	5,590	3,270	2,370	322	200	1,110	2,210	3,470	1,330
10......	1,100	736	700	6,690	2,540	1,900	317	186	1,570	2,050	3,470	1,380
11......	1,000	700	650	6,690	2,210	1,570	293	193	1,700	1,700	3,270	1,700
12......	1,000	700	650	6,400	2,050	1,380	284	228	1,330	1,500	3,080	2,540
13......	1,000	700	650	6,120	1,900	1,900	266	171	1,110	1,270	3,470	4,130
14......	900	700	750	6,690	1,760	3,270	249	157	956	1,110	3,680	5,080
15......	900	700	750	7,580	1,330	3,470	240	144	738	1,010	3,470	5,330
16......	900	700	800	8,780	1,630	3,080	232	131	662	864	3,080	5,080
17......	900	700	850	9,080	1,500	2,540	244	134	662	821	2,540	5,330
18......	886	700	878	8,484	1,500	2,050	244	131	625	1,500	2,540	5,330
19......	850	700	850	7,280	1,500	1,570	249	131	526	5,080	3,680	5,080
20......	800	750	900	6,690	1,700	1,270	258	134	464	5,590	3,900	4,130
21......	800	750	1,000	6,690	1,500	1,060	244	134	408	5,850	3,680	3,270
22......	750	750	930	6,400	1,160	864	228	131	408	5,590	3,270	2,890
23......	750	750	1,000	6,120	1,500	778	208	128	381	5,330	2,540	4,360
24......	700	750	1,080	5,850	1,570	698	200	125	381	5,590	2,210	6,120
25......	700	750	1,080	5,590	1,760	625	204	128	381	5,590	2,210	6,980
26......	700	750	1,360	5,850	1,760	625	228	131	381	4,840	1,900	6,690
27......	750	773	1,650	6,400	1,700	591	240	131	366	4,130	1,900	6,120
28......	800	770	3,310	6,980	1,500	778	232	200	356	3,080	1,760	5,590
29......	900	......	3,830	7,580	1,110	778	236	435	371	2,540	2,210	4,360
30......	800	......	4,210	7,880	1,330	662	236	778	464	2,210	3,080	3,470
31......	761	......	4,130	......	1,110	......	236	557	......	1,900	......	3,270

Monthly Discharge of Sacandaga River at Cable Station, near Hadley, N. Y.
[Drainage area, 1,050 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	....	....	1,030	0.981	1.13
February	....	....	735	0.700	0.73
March	....	....	1,250	1.19	1.37
April	9,080	2,370	5,920	5.64	6.29
May	8,030	1,110	2,930	2.79	3.22
June	3,510	591	1,470	1.40	1.56
July	598	200	296	0.282	0.33
August	855	125	202	0.192	0.22
September	1,790	351	659	0.628	0.70
October	5,850	662	2,680	2.55	2.94
November	3,970	1,500	2,680	2.55	2.84
December	7,010	1,330	3,710	3.54	4.08

SACANDAGA RIVER AT NORTHVILLE, N. Y.

This station is located about three-quarters mile upstream from the steel highway bridge at Northville and was established August 26, 1907. It has been maintained by the State Water Supply Commission and State Conservation Commission in coöperation with the U. S. Geological Survey, to obtain general statistical and comparative data regarding the flow of the Sacandaga.

This station is located about 1 mile below the outlet of East Stony creek and about 2 miles below West Stony creek. It is about 1¼ miles above a low storage dam at Sacandaga park in Northville. Pondage from this dam extends to the highway bridge at certain stages.

The datum of the gage has remained the same during the maintenance of the station. The U. S. Weather Bureau maintains a river and flood station at the steel highway bridge. During the winter months the discharge is usually affected by the presence of ice to such an extent that gage readings are discontinued. Conditions for obtaining accurate discharge data for the remainder of the year are very good and an excellent rating curve has been developed.

Mean Daily Discharge, Second-feet, of Sacandaga River at Northville, N. Y.

DAY.	Mar.	April.	May.	June.	July.	Aug.	Sept.
1910.							
1	......	11,200	4,390	2,450	360	400	326
2	......	10,400	3,090	2,760	326	412	307
3	......	7,050	3,280	2,480	326	424	412
4	......	5,710	4,960	2,620	326	412	424
5	......	6,800	4,720	2,760	291	370	412
6	......	6,010	3,500	6,620	223	284	454
7	......	7,080	2,730	5,160	226	291	424
8	......	4,570	2,620	4,660	307	307	412
9	......	3,700	2,170	4,210	235	370	370
10	......	3,210	1,820	3,180	229	424	326
11	......	2,840	1,670	3,060	223	901	291
12	......	1,670	1,480	3,370	214	546	275
13	......	1,530	1,300	2,620	220	424	259
14	......	1,410	1,390	1,930	205	488	284
15	......	1,360	1,390	1,830	191	406	291
16	......	1,300	1,320	2,000	200	395	275
17	......	1,410	1,070	2,170	214	370	326
18	......	4,480	1,190	2,270	208	346	294
19	......	6,840	1,330	2,340	200	395	253
20	......	6,400	1,650	1,650	197	370	200
21	......	4,450	2,340	1,300	200	360	223
22	......	2,840	2,270	1,090	205	326	229
23	......	2,550	2,200	829	214	259	326
24	4,390	4,570	1,880	684	220	259	330
25	9,750	5,960	1,930	643	226	259	297
26	11,900	3,180	6,070	602	214	278	......
27	7,440	4,660	5,750	562	220	266	......
28	7,200	5,900	4,000	523	412	275	......
29	11,300	4,520	2,480	436	291	259	......
30	12,300	4,460	3,060	424	235	214	......
31	14,100	......	2,620	......	223	275	......

NOTE.— This table supersedes that for 1910, published on page 674 of the State Engineer's report for 1910.

Monthly Discharge of Sacandaga River at Northville, N. Y.
[Drainage area, 740 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
March	14,100	....	5,300	7.16	8.26
April	11,200	1,300	4,600	6.22	6.94
May	6,070	1,070	2,630	3.55	4.09
June	6,620	424	2,240	3.03	3.38
July	412	191	245	0.331	0.38
August	901	214	367	0.496	0.57
September	....	200	520	0.703	0.78

NOTE.— This table supersedes that for 1910, published on page 675 of the State Engineer's report for 1910.

SACANDAGA RIVER AT WELLS, N. Y.

This station is located at the steel highway bridge over the east branch of the Sacandaga river in the southern part of the village of Wells, about 2½ miles above the junction of the east

and west branches. It was established August 26, 1907, by the N. Y. State Water Supply Commission in coöperation with the U. S. Geological Survey, to obtain general statistical and comparative data regarding the flow of the Sacandaga river.

The datum of the chain gage attached to the bridge has remained the same during the maintenance of the station. During the winter months the discharge is usually affected by the presence of ice. Conditions for obtaining accurate discharge data are good, and a fairly good rating curve has been developed. All measurements are made from the bridge.

Information in regard to this station is contained in the annual reports of the U. S. Geological Survey.

The following discharge tables for 1907–1910 supersede those published in previous reports of the State Engineer.

Mean Daily Gage Height, in Feet, of Sacandaga River at Wells, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.
1911.									
1	6.80	5.20	4.70	5.30	7.80	5.45	4.40	3.82	6.4
2	6.70	5.20	4.70	5.20	8.40	5.35	4.36	3.82	7.2
3	7.20	5.25	4.60	5.10	7.60	5.30	4.32	3.86	7.0
4	7.20	5.20	4.60	5.10	7.50	5.30	4.32	3.78	8.1
5	7.20	5.30	4.50	5.10	7.60	5.30	4.28	3.75	9.9
6	7.20	5.30	4.50	5.30	7.20	5.40	4.22	3.74	10.2
7	7.00	5.20	4.48	6.15	6.40	5.75	4.15	3.71	10.2
8	6.70	5.20	4.48	6.60	7.20	5.90	4.08	3.70	10.3
9	6.60	5.20	4.45	6.30	7.00	5.60	4.00	3.69	10.5
10	6.50	5.10	4.42	6.30	6.40	5.35	4.00	3.68	10.2
11	6.25	5.10	4.40	6.30	6.40	5.20	3.92	3.64	10.1
12	6.10	5.10	4.42	6.50	6.40	5.65	3.90	3.60	10.1
13	5.85	5.10	4.45	6.70	6.40	6.60	3.95	3.60	10.1
14	5.90	5.00	4.65	7.10	6.40	6.90	3.90	3.62	10.1
15	5.80	5.00	4.45	7.60	6.40	6.40	3.85	3.62	10.2
16	5.70	5.05	4.55	7.10	6.40	5.95	3.88	3.60	10.4
17	5.60	5.00	4.60	6.80	6.40	5.65	3.88	3.64	10.2
18	5.45	5.00	4.60	6.80	6.35	5.50	3.88	3.60	10.1
19	5.30	4.90	4.60	6.90	6.30	5.25	3.92	3.60	10.0
20	5.20	4.90	4.50	7.00	6.40	5.10	3.90	3.62	10.0
21	5.20	4.90	4.50	7.00	6.30	4.90	3.92	3.60	10.0
22	5.15	4.80	4.60	6.70	6.45	4.90	3.90	3.62	10.0
23	5.10	4.80	4.60	6.50	6.40	4.80	3.80	3.64	10.0
24	5.00	4.75	4.60	6.35	6.40	4.80	3.98	3.60	10.0
25	5.00	4.75	4.60	6.90	6.35	4.70	4.00	3.59	10.0
26	4.98	4.70	4.65	7.50	6.40	4.60	3.94	3.58	10.0
27	4.98	4.70	4.85	7.90	6.35	4.50	3.88	3.59	10.1
28	5.10	4.68	4.50	8.10	6.00	4.50	3.88	3.95	10.1
29	5.25	......	5.85	8.80	5.75	4.46	3.92	8.20	10.1
30	5.20	......	5.60	8.00	5.70	4.42	3.94	6.20	10.1
31	5.20	......	5.40	......	5.48	......	3.94	6.10	......

NOTE.— Relation of gage height to discharge doubtless affected by ice from January 1 to about March 10. The gage readings were probably to water-surface. The gage heights were probably more or less affected by back-water from log jams during April, May and June. Beginning August 29, the gage heights do not correctly indicate the discharge, as the station was flooded out by back-water from the newly constructed dam below.

Current-meter Discharge Measurements of Sacandaga River at Wells, N. Y.

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Velocity correction factor.	Corrected discharge.
			Square feet.	*Feet.*		*Second-feet.*
1907.						
Nov. 8 *a*	J. B. Pierson	7.50	384	95	0.72	2,670
1910.						
Mar. 26 *c*	W. G. Hoyt	8.50	530	100	....	3,250
Mar. 27 *c*	W. G. Hoyt	7.58	438	98	....	2,390
Mar. 28 *c*	W. G. Hoyt	7.55	428	98	....	2,420
Mar. 29 *c*	W. G. Hoyt	8.50	530	97	....	3,160
June 8	W. G. Hoyt	6.54	351	91	....	1,400
June 9	W. G. Hoyt	6.30	319	89	....	1,170

a Gaging by surface floats. *c* Gaging by subsurface measurements.

NOTE.— Some of the discharge measurements for 1910, as published in the annual report of the State Engineer, are revised from vertical velocity curve measurements, which indicate that a coefficient of 0.72 should be applied to all measurements made by the subsurface method. Measurements revised on this basis are published above.

Current-meter Discharge Measurements of Sacandaga River at Wells, N. Y.

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Velocity correction factor.	Corrected discharge.
			Square feet.	*Feet.*		*Second-feet.*
1911.						
Jan. 26 *a*	F. J. Shuttleworth	4.95	149	73	....	194
Mar. 13 *b*	C. S. De Golyer	4.37	151	74	....	166
April 19 *c*	E. S. Cullings	6.95	358	90	0.72	1,660
April 20 *c*	E. S. Cullings	7.00	356	90	0.72	1,740
April 25 *c*	W. G. Hoyt	6.83	370	92	0.72	1,700
July 23 *d*	C. S. De Golyer	3.96	56	46	....	47

a Partial ice cover.
b River practically free from ice above gage and for 300 feet below gage.
c Gaging by subsurface measurements.
d Measurement made by wading one half-mile upstream.

Mean Daily Discharge, Second-feet, of Sacandaga River at Wells, N. Y.

DAY.	Aug.	Sept.	Oct.	Nov.	Dec.
1907.					
1	......	25	186	748	380
2	......	25	176	780	358
3	......	33	208	2,350	358
4	......	297	192	1,800	358
5	......	402	450	1,100	337
6	......	260	360	1,460	337
7	......	192	425	2,940	337
8	......	116	337	2,540	317
9	......	105	337	1,890	317
10	......	132	450	1,260	297
11	......	225	402	1,030	1,060
12	......	780	360	990	1,800
13	......	402	650	850	1,060
14	......	242	530	682	590
15	......	176	475	620	......
16	......	118	450	560	......
17	......	118	425	530	......
18	......	100	380	475	......
19	......	86	337	450	......
20	......	86	337	425	......
21	......	83	317	402	......
22	......	86	317	530	......
23	......	73	297	475	......
24	......	118	297	475	......
25	25	176	260	475	......
26	25	146	225	475	......
27	25	118	242	475	......
28	24	105	1,460	450	......
29	23	176	1,620	425	......
30	23	167	1,060	425	......
31	23	......	1,290	......	......

NOTE.— This table supersedes that for 1907 published on page 677 of the State Engineer's report for 1910.

Mean Daily Discharge, Second-feet, of Sacandaga River at Wells, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1908.												
1.....	450	......	475	1,540	3,560	715	77	32	16	43	129	188
2.....	......	......	425	1,380	5,210	780	70	26	16	64	121	161
3.....	......	......	425	1,260	2,840	590	64	25	16	68	105	95
4.....	......	......	450	955	2,840	530	60	29	16	68	64	225
5.....	......	......	450	885	3,140	530	64	31	15	45	68	173
6.....	......	......	450	990	2,540	475	60	46	14	39	60	129
7.....	......	......	380	1,380	2,260	402	70	50	16	37	53	225
8.....	......	......	358	2,070	2,350	380	86	45	16	29	48	475
9.....	......	......	358	2,940	2,160	358	73	33	16	27	46	560
10.....	......	......	358	2,540	1,460	358	60	41	14	25	46	530
11.....	......	......	358	3,140	2,840	337	52	36	14	64	70	475
12.....	......	......	380	2,640	1,540	297	46	29	14	53	155	450
13.....	......	......	402	2,160	1,300	260	43	28	13	48	135	402
14.....	......	......	402	2,640	990	242	41	32	12	41	108	380
15.....	......	1,890	920	2,350	1,220	225	36	29	12	37	105	358
16.....	......	3,560	1,030	1,620	1,220	192	31	28	12	32	105	317
17.....	......	2,070	955	1,460	990	176	33	29	12	31	79	278
18.....	......	1,460	850	1,260	1,140	192	138	33	12	29	73	225
19.....	......	1,340	748	1,980	715	225	167	31	12	26	70	225
20.....	......	1,100	682	1,890	715	225	100	31	11	25	86	225
21.....	......	955	590	1,710	590	186	75	30	10	24	93	192
22.....	......	955	590	1,710	748	161	81	25	10	23	75	186
23.....	......	780	560	2,070	650	146	68	29	10	23	77	192
24.....	......	682	682	3,560	715	146	57	25	11	25	79	192
25.....	......	650	885	4,000	850	146	50	22	11	25	116	186
26.....	......	530	850	3,670	486	126	60	21	10	38	192	176
27.....	......	530	1,300	3,890	560	100	62	20	11	278	402	180
28.....	......	530	2,260	3,560	530	93	57	18	12	161	297	176
29.....	......	475	3,350	3,140	530	86	58	17	111	260	161	173
30.....	......	......	3,350	3,040	530	79	46	17	77	225	149	180
31.....	......	......	1,890	......	685	......	33	17	......	161	......	186

NOTE.— This table supersedes that for 1908 published on page 677 of the State Engineer's report for 1910.

Mean Daily Discharge, Second-feet, of Sacandaga River at Wells, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1909.												
1.....	189	300	1,060	530	1,620	530	110	38	23	37	28	79
2.....	186	300	885	650	2,440	530	103	32	23	31	28	75
3.....	176	300	780	885	1,620	475	167	32	22	28	28	64
4.....	189	300	715	955	2,070	475	144	30	22	26	29	64
5.....	242	300	583	920	1,620	560	116	29	23	25	31	57
6.....	1,050	300	650	1,380	2,440	1,060	103	29	23	24	31	64
7.....	700	1,000	590	3,240	3,780	850	91	28	22	23	27	70
8.....	500	800	560	3,670	2,540	620	79	27	21	22	24	60
9.....	500	700	530	3,140	1,380	502	73	26	19	21	21	81
10.....	400	640	502	2,260	2,540	530	68	26	21	21	22	138
11.....	440	800	530	1,540	3,350	850	64	25	23	21	27	86
12.....	310	700	502	1,380	2,350	590	58	24	22	22	29	77
13.....	280	600	475	2,070	2,160	560	52	23	21	22	29	76
14.....	300	550	502	5,320	2,160	590	50	23	20	23	29	65
15.....	360	650	530	4,440	1,980	475	50	27	19	24	29	65
16.....	390	700	530	3,560	1,620	380	45	41	19	27	29	65
17.....	340	600	475	3,140	1,300	297	50	118	18	29	36	65
18.....	300	600	425	3,460	1,100	380	52	127	18	29	41	65
19.....	260	500	475	3,450	1,180	380	53	105	18	29	43	65
20.....	230	1,500	450	3,400	1,140	450	50	77	18	29	45	65
21.....	200	2,800	402	2,080	1,140	380	50	60	18	28	50	65
22.....	175	2,250	402	2,760	1,030	297	53	53	17	46	50	65
23.....	175	1,350	402	2,580	815	260	86	50	17	57	81	65
24.....	250	1,120	380	2,420	620	225	127	41	23	45	108	65
25.....	1,400	2,400	380	1,620	590	208	135	30	25	38	108	65
26.....	1,400	1,600	475	1,920	590	186	110	27	25	36	121	65
27.....	1,000	1,200	450	2,330	590	176	77	26	26	36	155	65
28.....	700	1,200	475	2,420	650	161	60	24	31	31	118	65
29.....	600	......	530	2,500	650	135	53	25	38	33	93	65
30.....	500	......	450	2,160	590	116	46	23	41	27	86	65
31.....	400	......	475	......	560	......	45	23	......	28	......	65

NOTE.— This table supersedes that for 1909 published on page 678 of the State Engineer's report for 1910.

Mean Daily Discharge, Second-feet, of Sacandaga River at Wells, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1	......	......	3,240	3,670	920	1,800	146	46	52	530	297	155
2	......	......	2,940	3,350	885	1,620	149	43	60	425	278	155
3	......	......	2,350	2,540	990	1,460	129	46	93	358	297	......
4	......	......	1,890	2,260	1,030	1,380	110	278	260	317	380	......
5	......	......	1,620	2,350	990	1,460	103	475	225	260	650	......
6	......	......	1,540	2,260	990	1,710	81	260	260	260	650	......
7	......	......	1,620	2,160	990	1,980	43	146	225	242	620	......
8	......	......	1,340	1,800	920	1,500	60	111	176	225	590	......
9	......	......	1,260	1,340	920	1,060	53	95	146	225	530	......
10	......	......	1,220	935	780	920	43	93	116	225	475	......
11	......	......	1,140	905	780	920	50	380	95	186	450	......
12	......	......	990	850	715	1,140	43	278	81	161	425	......
13	......	......	920	1,140	650	1,060	42	176	83	192	337	......
14	......	......	850	1,080	650	780	38	127	127	192	297	......
15	......	......	748	670	650	650	36	110	110	186	278	......
16	......	......	650	720	715	560	41	337	95	173	260	......
17	......	......	650	720	650	650	60	297	81	161	260	......
18	......	......	620	1,620	715	715	58	278	70	146	225	......
19	......	......	620	2,670	815	590	52	225	73	138	208	......
20	......	......	590	2,000	780	475	45	176	68	138	225	......
21	475	......	780	745	955	380	41	138	60	138	208	......
22	2,070	......	1,140	745	850	297	46	127	58	155	192	......
23	1,540	......	1,980	822	850	297	60	110	53	260	192	......
24	1,140	......	2,840	298	1,060	260	55	95	50	208	208	......
25	1,050	......	3,350	545	1,460	225	52	100	132	225	192	......
26	780	......	3,460	885	2,070	192	53	91	402	260	186	......
27	560	......	2,350	780	1,460	192	53	81	2,440	317	186	......
28	475	......	2,260	885	1,060	176	60	70	1,460	530	167	......
29	425	......	3,140	920	990	180	83	64	1,140	475	167	......
30	425	......	3,780	920	1,060	156	64	60	920	475	161	......
31	475	......	3,780	......	1,060	......	52	60	......	337	......	......

NOTE.— This table supersedes that for 1910 published on page 678 of the State Engineer's report for 1910.

Mean Daily Discharge, Second-feet, of Sacandaga River at Wells, N. Y.

DAY.	Mar.	April.	May.	June.	July.	Aug.
1911.						
1	......	530	2,540	620	161	33
2	......	475	2,330	560	149	33
3	......	425	1,700	530	138	38
4	......	425	1,620	530	138	29
5	......	425	1,700	530	127	27
6	......	530	1,410	590	110	26
7	......	1,100	905	815	93	24
8	......	1,460	1,410	920	77	23
9	......	1,220	1,280	715	60	22
10	......	1,220	1,300	560	60	22
11	161	1,220	1,300	475	46	19
12	167	1,380	1,300	748	43	17
13	176	1,540	1,300	1,460	52	17
14	242	1,890	1,300	1,710	43	18
15	176	2,350	1,300	1,300	37	18
16	208	1,890	1,300	955	41	17
17	225	1,620	1,300	748	41	19
18	225	1,620	1,260	650	41	17
19	225	1,710	1,220	502	46	17
20	192	1,800	1,300	425	43	18
21	192	1,800	1,200	337	46	17
22	225	1,540	1,340	337	43	18
23	225	1,380	1,300	297	31	19
24	225	1,260	1,300	297	57	17
25	225	1,710	1,260	260	60	16
26	242	2,260	1,300	225	50	16
27	317	2,640	1,260	192	41	16
28	192	2,840	990	192	41	52
29	885	3,560	815	180	46	(100)
30	715	2,740	780	167	50	(160)
31	590	......	648	......	50	(140)

Monthly Discharge of Sacandaga River at Wells, N. Y.
[Drainage area, 263 square miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1907.					
August, 25–31	25	23	24	0.091	0.02
September	780	25	172	0.654	0.73
October	1,620	176	479	1.820	2.10
November	2,040	402	936	3.560	3.97
December	1,800	297	749	2.850	3.29
1908.					
January	....	....	450	1.710	1.97
February	3,560	....	724	2.150	2.98
March	3,350	358	844	3.210	3.70
April	4,000	885	2,250	8.560	9.55
May	5,210	480	1,550	5.890	6.79
June	780	79	292	1.110	1.24
July	167	31	65.1	0.248	0.29
August	50	17	29.2	0.111	0.13
September	111	10	18.4	0.070	0.08
October	278	23	66.9	0.254	0.29
November	402	46	112	0.426	0.48
December	560	95	262	0.996	1.15
1909.					
January	....	....	456	1.730	1.99
February	....	....	931	3.540	3.69
March	1,060	380	535	2.040	2.35
April	5,320	530	2,410	9.170	10.23
May	3,780	560	1,560	5.930	6.84
June	1,060	116	441	1.680	1.87
July	167	45	78.1	0.297	0.34
August	127	23	40.9	0.156	0.18
September	41	17	22.5	0.086	0.10
October	57	21	29.6	0.113	0.13
November	155	21	52.5	0.200	0.22
December	138	57	69.7	0.265	0.31
The year	5,320	17	546	2.080	28.25
1910.					
January	2,070	....	368	1.40	1.61
February	....	....	300	1.14	1.19
March	3,780	590	1,800	6.84	7.85
April	3,670	298	1,420	5.40	6.01
May	2,070	650	949	3.61	4.16
June	1,980	156	826	3.14	3.50
July	149	36	64.5	0.245	0.28
August	475	43	160	0.608	0.71
September	2,440	50	307	1.17	1.30
October	530	138	262	1.996	1.15
November	650	161	320	1.22	1.36
December	....	....	120	0.456	0.57
The year	....	36	575	2.19	29.65

Note.— These tables supersede those for 1907, 1908, 1909 and 1910, published on page 679 of the State Engineer's report for 1910.

Monthly Discharge of Sacandaga River at Wells, N. Y.
[Drainage area, 263 square miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	....	....	240	0.913	1.05
February	....	....	170	0.646	0.67
March	885	....	248	0.943	1.09
April	3,560	425	1,550	5.89	6.57
May	2,540	648	1,330	5.06	5.83
June	1,710	167	594	2.26	2.52
July	161	31	66.5	0.253	0.29
August	....	16	33.1	0.126	0.15

NOTE.— Discharge during January and February and from March 1 to 10 has been estimated from the discharge at Hadley.
Mean discharge March 1 to 10 = 166 second-feet.

SCHROON RIVER.

SCHROON RIVER AT RIVERBANK, N. Y.

This station is located on the steel highway bridge near Riverbank postoffice, between the towns of Warrensburg and Bolton, about 9 miles north of the village of Warrensburg and about 10 miles downstream from the outlet of Schroon lake. It was established September 23, 1907, by the N. Y. State Water Supply Commission in coöperation with the U. S. Geological Survey, to obtain general statistical data in regard to the flow of Schroon river.

There are several dams at the village of Warrensburg used for power purposes. During September, 1907, a timber crib dam was constructed at Starbuckville, about 6 miles above the gaging station, for storage purposes, this affording a head of some 8 feet and ponding water to Schroon lake. Tumble Head falls begin about 1 mile above the gaging station and extend upstream for about a mile farther, affording a total fall of some 30 feet.

The datum of the chain gage attached to the bridge has remained the same during the maintenance of the station. During the winter months the discharge is affected by ice conditions. Conditions for obtaining accurate discharge data are good and a very good rating curve has been developed. All measurements are made from the bridge.

Since 1907, the regimen of flow of Schroon river during the low-water season has been considerably affected by the storage held in Schroon lake.

Information in regard to this station is contained in the annual reports of the U. S. Geological Survey.

Mean Daily Gage Height, in Feet, of Schroon River at Riverbank, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	1.85	2.25	2.1	2.5	5.2	2.6	1.7	1.3	1.2	1.4	2.35	2.65
2......	1.85	2.3	2.05	2.35	5.2	2.4	1.65	1.3	1.2	1.4	2.4	2.6
3......	2.0	2.3	2.0	2.6	5.5	2.35	1.6	1.25	1.2	1.4	2.4	2.6
4......	2.05	2.4	1.95	2.55	5.4	2.3	2.15	1.25	1.12	1.45	2.4	2.65
5......	2.1	2.25	1.9	2.6	5.0	2.9	2.15	1.25	1.15	1.45	2.35	2.55
6......	2.1	2.35	1.95	2.85	4.8	3.2	2.15	1.2	1.15	1.5	2.4	2.5
7......	2.05	2.4	1.85	3.1	4.4	3.2	2.1	1.25	1.12	1.6	2.4	2.5
8......	2.1	2.3	1.9	3.2	4.2	3.3	1.7	1.25	1.12	1.8	2.32	2.5
9......	2.4	2.15	1.95	3.2	4.2	3.2	1.4	1.25	1.3	1.8	2.32	2.5
10......	2.3	2.2	1.95	3.6	4.1	3.1	1.6	1.25	1.55	1.75	2.5	2.45
11......	2.3	2.2	1.8	3.8	3.9	2.0	1.45	1.25	1.45	1.8	2.45	2.5
12......	2.3	2.2	1.65	4.1	3.8	3.2	1.35	1.15	1.5	1.75	2.45	2.5
13......	2.25	2.4	1.75	4.3	3.7	3.2	1.3	1.2	1.6	1.7	2.55	2.7
14......	2.3	2.35	1.8	4.4	3.4	3.2	1.3	1.15	1.48	1.7	2.65	3.1
15......	2.3	2.3	1.95	5.1	3.4	3.2	1.35	1.15	1.5	1.6	2.7	3.2
16......	2.4	2.2	2.0	5.4	3.4	3.2	1.2	1.15	1.5	1.6	2.8	3.3
17......	2.4	2.25	2.05	5.5	3.3	3.3	1.25	1.15	1.48	1.65	2.7	3.5
18......	2.35	2.25	1.9	5.4	3.3	2.9	1.3	1.2	1.48	1.8	2.8	3.6
19......	2.3	2.15	1.75	5.4	3.4	3.0	1.4	1.2	1.5	2.2	2.75	3.6
20......	2.3	2.25	1.9	5.3	3.4	2.75	1.4	1.15	1.45	2.2	2.8	3.6
21......	2.25	2.25	1.95	5.3	2.85	2.65	1.4	1.15	1.45	2.2	2.8	3.5
22......	2.22	2.3	1.9	5.2	2.9	2.65	1.35	1.15	1.48	2.2	2.7	3.6
23......	2.3	2.25	1.9	5.1	2.95	2.55	1.3	1.1	1.45	2.42	2.75	3.8
24......	2.45	2.3	1.95	5.0	3.2	2.25	1.45	1.1	1.35	2.35	2.7	3.9
25......	2.4	2.25	2.0	5.0	3.6	2.3	1.35	1.05	1.38	2.4	2.7	4.1
26......	2.4	2.35	1.8	5.0	2.95	2.35	1.3	1.05	1.45	2.4	2.65	4.1
27......	2.4	2.2	2.15	5.0	3.4	2.4	1.35	1.05	1.45	2.4	2.65	4.1
28......	2.45	2.15	2.35	5.2	2.3	2.3	1.35	1.1	1.4	2.35	2.65	4.1
29......	2.15	......	2.35	5.2	2.35	2.25	1.4	1.15	1.42	2.35	2.65	4.0
30......	2.35	......	2.45	5.2	2.3	2.2	1.25	1.1	1.4	2.4	2.65	4.0
31......	2.3	......	2.5	......	3.2	......	1.3	1.1	......	2.4	......	3.6

Mean Daily Discharge, Second-feet, of Schroon River at Riverbank, N. Y.

DAY.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.										
1	......	5,460	1,940	2,470	694	136	331	432	411	294
2	......	5,420	1,870	2,270	259	164	350	390	432	312
3	......	5,060	1,970	2,000	226	136	390	432	390	331
4	......	4,620	1,890	1,840	259	350	350	411	411	259
5	......	4,220	1,970	1,730	608	210	350	411	476	276
6	......	3,880	2,080	1,840	499	178	390	411	454	276
7	......	3,740	2,160	1,800	499	164	390	390	476	312
8	......	3,540	2,000	2,050	432	178	411	370	476	......
9	......	3,340	2,050	2,050	432	178	390	350	476	......
10	......	3,040	2,000	2,000	350	164	370	370	476	......
11	......	2,500	1,940	1,840	350	178	331	370	476	......
12	......	2,000	1,940	1,840	226	164	350	390	454	......
13	2,090	2,160	1,890	1,670	242	149	390	370	411	......
14	1,910	2,000	1,840	1,400	242	122	194	350	454	......
15	1,780	1,890	1,520	1,200	210	164	164	350	411	......
16	1,670	1,760	1,520	1,240	226	178	178	294	390	......
17	1,570	1,650	1,400	1,200	178	164	350	390	411	......
18	1,470	1,400	966	1,120	194	164	331	390	432	......
19	1,310	1,550	966	1,080	178	164	331	370	432	......
20	1,270	1,910	933	1,000	178	149	312	350	312	......
21	1,220	2,380	980	966	164	149	294	312	390	......
22	1,220	2,470	836	933	149	164	312	331	390	......
23	1,340	2,350	913	868	194	226	294	294	390	......
24	1,590	2,220	1,160	836	136	242	294	312	294	......
25	2,220	2,190	1,200	776	149	226	370	331	350	......
26	2,940	2,100	1,940	694	136	210	370	331	350	......
27	3,380	2,190	1,870	806	149	178	411	331	276	......
28	3,870	2,130	2,100	806	149	194	522	390	312	......
29	3,020	2,100	2,000	836	136	226	499	411	276	......
30	4,700	2,050	2,330	748	122	210	432	350	294	......
31	5,140	......	2,420	......	97	276	......	411	......	......

NOTE.— This table supersedes that for 1910, published on page 683 of the State Engineer's eport for 1910.

Mean Daily Discharge, Second-feet, of Schroon River at Riverbank, N. Y.

DAY.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.										
1	......	568	3,040	495	242	130	105	156	499	643
2	......	499	3,040	395	226	130	105	156	522	618
3	......	618	3,400	372	212	118	105	156	522	618
4	......	593	3,280	350	411	118	86	170	522	643
5	......	618	2,800	645	411	118	93	170	499	593
6	......	749	2,560	815	411	105	93	184	522	568
7	......	900	2,100	815	390	118	86	212	522	568
8	......	966	1,890	875	242	118	86	276	485	568
9	......	966	1,890	815	156	118	130	276	485	568
10	......	1,290	1,780	755	212	118	198	259	568	545
11	......	1,470	1,570	235	170	118	170	276	545	568
12	......	1,780	1,470	815	143	93	184	259	545	568
13	......	2,000	1,380	815	130	105	212	242	593	668
14	......	2,100	935	815	130	93	178	242	643	900
15	......	2,920	935	815	143	93	184	212	668	966
16	......	3,280	935	815	105	93	184	212	721	1,040
17	......	3,400	875	875	118	93	178	226	668	1,200
18	......	3,280	875	645	130	105	178	276	721	1,290
19	259	3,280	935	700	156	105	184	432	694	1,290
20	312	3,160	935	694	156	93	170	432	721	1,290
21	331	3,160	620	643	156	93	170	432	721	1,200
22	312	3,040	645	643	143	93	178	432	668	1,290
23	312	2,920	673	593	130	81	170	531	694	1,470
24	331	2,800	815	454	170	81	143	499	668	1,570
25	350	2,800	1,065	476	143	70	151	522	668	1,780
26	276	2,800	673	499	130	70	170	522	643	1,780
27	411	2,800	935	522	143	70	170	522	643	1,780
28	499	3,040	350	476	143	81	156	499	643	1,780
29	499	3,040	372	454	156	93	162	499	643	1,670
30	545	3,040	350	432	118	81	156	522	643	1,670
31	568	......	815	......	130	81	......	522	......	1,290

Monthly Discharge of Schroon River at Riverbank, N. Y.
[Drainage area, 534 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	....	....	188	0.352	0.41
February	....	....	363	0.680	0.70
March	5,140	....	1,910	3.58	4.13
April	5,460	1,400	2,780	5.21	5.81
May	2,420	836	1,700	3.18	3.67
June	2,470	694	1,400	2.62	2.92
July	694	97	260	0.487	0.56
August	350	122	186	0.348	0.40
September	522	164	348	0.652	0.73
October	432	294	368	0.689	0.79
November	476	276	399	0.747	0.83
December	331	....	219	0.410	0.47
The year	5,460	97	843	1.58	21.42

NOTE.— This table supersedes that for 1910, published on page 684 of the State Engineers' report for 1910.

Monthly Discharge of Schroon River at Riverbank, N. Y.
[Drainage area, 534 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	....	....	*a* 357	0.669	0.77
February	....	....	*a* 250	0.468	0.49
March	568	....	*a* 310	0.581	0.67
April	3,400	499	2,130	3.99	4.45
May	3,400	350	1,420	2.66	3.07
June	875	235	625	1.17	1.30
July	411	105	189	0.354	0.41
August	130	70	99	0.186	0.21
September	212	86	151	0.283	0.32
October	531	156	333	0.624	0.72
November	721	485	610	1.14	1.27
December	1,780	545	1,030	1.99	2.29

a Estimated.

DELAWARE RIVER DRAINAGE BASIN.

DESCRIPTION OF DELAWARE RIVER.

The head waters of Delaware river rise in Delaware, Greene and Schoharie counties, N. Y., the source of the main stream, which is commonly known as West branch, to distinguish it from the smaller East or Pepacton branch, being a small lake almost on the line of Schoharie and Delaware counties, at an elevation of 1,886 feet above tide. From this lake it flows southwestward across central Delaware county to Deposit, where it receives Oquaga creek, a large tributary draining eastern Broome county, and turns abruptly to the southeast, forming the boundary line between New York and Pennsylvania until Port Jervis is reached. Here it turns again to the southwest and flows for a distance of about 40 miles along the base of the Shawangunk range until it passes through the water gap, from which point it flows irregularly southward to Trenton. Below Trenton the course is in general southwestward to Delaware Bay. South of Port Jervis it forms the dividing line between Pennsylvania and New Jersey, and for a few miles it is the boundary between Delaware and New Jersey.

East branch rises at Grand Gorge in northeastern Delaware county, and flows parallel to West branch across southern Delaware county, uniting with the latter stream at Hancock.

The total length of the river from the mouth to the head of West branch is about 410 miles; its drainage area, measured at Philadelphia and including Schuylkill river, is 10,100 square miles, of which about 2,580 square miles lie in New York, 5,750 in Pennsylvania, and 1,800 in New Jersey. The river is tidal to Trenton, which lies also at the head of navigation.

DELAWARE RIVER AT PORT JERVIS, N. Y.

This station is located at the toll bridge over the Delaware river at Port Jervis. It was established for the United States Weather Bureau by Irving Righter, City Engineer, Port Jervis, N. Y., October 12, 1904.

This station is maintained for the purpose of flood predictions by the Weather Bureau and the records of gage heights are supplied to the Geological Survey for the purpose of determining the regimen of flow of the upper Delaware drainage.

Mongaup river enters the Delaware from the north about 6 miles above the station and Neversink river, also from the north, enters about one mile below the station.

The river section is affected by ice to a greater or less extent each winter.

Considerable difficulty has been experienced in maintaining the datum of the chain gage constant. On September 4, 1908, a careful investigation was made and in order to avoid negative readings a change in the original datum of about 2 feet, as nearly as it could be determined, was made. The new chain length set on this date was 36.47 feet from rivet marker to the end of the weight. The relation between the gage datum and the following bench-marks was determined:

Port Jervis city bench-mark, from which the gage was originally established, is a cross located on the door-sill of the schoolhouse on Thompson street near Water street. Elevation above gage datum is 27.75 feet.

Bench-mark No. 2 is top of downstream left corner of pier of toll bridge. Elevation above gage datum, 29.92 feet.

Bench-mark No. 3 is top of right abutment of toll bridge at apex of angle caused by junction of downstream wing-wall. Ele-

vation above gage datum, 29.02 feet. The elevation of the datum of the gage is 414.89 feet above mean sea level.

Conditions of flow at this point are constant and a good rating table has been developed for low and medium stages. Careful comparisons of this station with the Riegelsville and the two Hancock stations indicate that the corrections applied to the gage heights were essentially correct and that the discharge data can be fully relied on.

Mean Daily Gage Height, in Feet, of Delaware River at Port Jervis, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	4.0	3.7	3.2	6.6	4.2	2.2	2.6	1.4	3.4	2.6	3.6	4.5
2......	3.5	2.7	3.2	5.0	4.2	2.2	2.4	1.4	3.2	3.1	4.1	3.8
3......	5.7	2.5	2.7	4.6	4.1	2.4	2.3	1.4	2.3	4.2	3.8	3.7
4......	8.0	2.4	2.7	4.4	3.9	2.3	2.1	1.4	2.4	3.8	3.5	3.5
5......	6.0	3.1	2.6	4.5	3.8	2.2	2.1	1.3	2.2	3.4	3.5	3.5
6......	5.4	3.5	2.5	5.5	3.6	2.4	2.0	1.4	2.1	3.2	3.3	3.4
7......	4.8	3.0	2.2	8.2	3.4	2.8	2.0	1.5	2.2	3.4	3.6	3.4
8......	4.4	2.8	2.2	8.5	3.1	3.0	2.0	1.5	3.2	4.2	3.8	3.3
9......	4.1	2.8	2.0	7.2	3.0	3.0	2.2	1.5	3.0	3.9	3.7	3.3
10......	3.8	3.0	2.2	6.5	2.8	2.8	2.0	1.7	2.9	3.8	3.5	3.2
11......	3.4	3.0	2.7	6.2	2.7	2.9	1.9	1.6	3.7	3.5	3.4	3.2
12......	3.3	2.8	2.7	5.9	2.6	4.4	1.8	1.4	3.4	3.3	3.2	3.3
13......	3.7	2.6	3.2	5.5	2.6	8.1	1.8	1.3	3.0	3.4	3.2	3.3
14......	3.7	2.5	3.7	5.3	2.5	8.4	1.7	1.2	3.0	3.2	4.2	3.3
15......	5.4	2.3	4.3	6.8	2.4	7.1	1.6	1.2	2.8	3.0	3.9	3.3
16......	5.4	2.3	4.3	6.9	2.8	5.9	1.5	1.2	2.5	2.9	3.7	3.8
17......	5.2	2.3	4.2	6.3	2.8	5.5	1.5	1.2	2.5	3.1	3.7	4.8
18......	3.8	2.7	3.9	5.6	2.6	5.2	1.6	1.3	2.4	3.1	3.7	4.8
19......	3.5	2.7	3.7	5.4	2.9	4.6	1.6	1.3	2.1	6.0	5.2	4.4
20......	3.5	2.6	3.7	5.3	2.9	4.1	1.6	1.2	2.2	5.8	5.2	4.1
21......	3.5	2.8	3.5	6.5	2.8	3.7	1.7	1.3	2.1	5.0	4.7	3.9
22......	3.4	2.8	3.9	5.8	2.7	3.4	1.9	1.3	1.9	5.6	4.5	3.8
23......	3.4	2.6	4.4	6.2	2.7	3.4	1.9	1.2	2.0	5.6	4.2	4.3
24......	3.2	2.5	4.2	5.7	2.6	3.2	2.0	1.08	2.0	6.4	4.0	6.3
25......	3.0	2.5	4.2	5.2	2.7	3.1	1.9	1.2	1.87	5.8	4.2	5.9
26......	2.6	2.4	4.2	4.5	2.5	3.4	1.7	1.5	1.87	5.2	4.1	5.0
27......	2.9	2.5	5.0	4.5	2.5	2.8	1.7	1.7	1.87	4.8	3.8	4.9
28......	3.0	2.5	10.7	4.3	2.4	2.6	1.6	1.7	1.87	4.5	3.7	5.2
29......	6.5	......	8.1	4.2	2.2	3.1	1.6	2.2	2.0	4.2	3.7	4.6
30......	5.2	......	6.9	4.0	2.0	2.9	1.5	3.3	2.3	4.0	4.3	4.1
31......	4.9	......	6.8	......	2.0	......	1.5	3.5	......	3.6	......	4.0

NOTE.— There is no direct information regarding the effect of ice at this station, but comparison with climatological records and the records at Riegelsville indicate that the relation of gage height to discharge was probably affected by ice on January 1, 16 and 17, and on March 1 to 2, and doubtless also for short intervals at other times during January, February and March.

Current-meter Discharge Measurement of Delaware River at Port Jervis, N. Y.

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Corrected discharge.
1911.			*Sq. ft.*	*Feet.*	*Sec.-ft.*
June 21....	C. S. De Golyer.................	3.74	2,610	582	4,910

Mean Daily Discharge, Second-feet, of Delaware River at Port Jervis, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1	......	4,100	67,300	8,120	12,500	4,670	1,900	590	390	740	450	1,570
2	......	3,830	52,500	6,620	7,350	4,100	1,730	665	520	665	450	1,420
3	......	3,830	46,000	5,930	6,270	3,830	1,570	590	520	665	450	1,420
4	......	3,570	32,700	4,970	8,120	3,570	1,570	590	590	520	665	1,280
5	......	3,320	26,800	4,380	8,520	3,320	1,280	665	920	450	1,280	1,280
6	......	2,860	23,900	3,570	8,120	3,320	1,280	520	1,570	390	1,570	1,280
7	......	2,080	28,200	5,600	7,350	5,280	1,280	590	1,570	390	1,570	......
8	......	1,420	35,000	6,270	7,350	4,970	1,150	590	1,420	390	1,420	......
9	......	2,080	25,300	6,270	4,970	4,380	1,030	665	1,420	330	1,570	......
10	......	2,450	18,000	5,280	4,100	3,830	1,030	665	1,030	275	1,730	......
11	......	2,500	13,500	4,100	5,930	4,100	920	2,450	920	275	1,570	......
12	......	2,500	12,100	4,100	5,280	5,930	920	1,900	825	275	1,420	......
13	......	2,500	11,100	4,970	4,670	6,620	920	1,150	740	275	3,320	......
14	......	2,500	11,100	4,380	4,100	5,930	920	1,030	665	225	2,650	......
15	......	2,500	10,200	3,570	3,570	4,670	825	825	665	225	2,450	......
16	......	2,450	8,930	3,570	3,320	4,380	825	665	665	225	2,080	......
17	......	2,450	8,120	3,320	3,080	4,380	825	590	665	225	2,080	......
18	......	2,450	6,980	4,100	2,860	5,600	740	520	665	225	1,730	......
19	......	2,260	5,930	11,100	2,450	5,600	920	590	590	225	1,730	......
20	......	2,260	5,930	12,500	2,260	5,280	1,280	590	520	450	1,570	......
21	......	3,320	12,500	10,200	2,860	4,670	1,280	665	520	450	1,420	......
22	38,100	3,830	14,600	9,350	2,860	3,830	740	665	520	450	1,420	......
23	50,100	9,780	13,000	8,520	2,860	3,320	740	590	450	520	1,280	......
24	23,900	8,520	12,100	8,120	2,650	2,650	740	590	450	450	1,280	......
25	15,100	7,730	16,200	7,730	3,570	2,260	665	520	390	450	1,280	......
26	15,100	7,730	20,500	21,800	6,270	1,900	665	450	520	590	1,280	......
27	8,520	6,270	17,400	37,300	10,200	1,900	590	450	520	520	1,570	......
28	6,270	7,730	16,200	21,200	7,730	2,080	590	450	825	520	1,420	......
29	6,270	......	14,600	15,100	6,980	2,450	520	390	740	520	1,420	......
30	5,600	......	10,700	13,500	5,280	2,260	665	390	740	450	1,570	......
31	4,100	......	8,930	......	4,670	......	590	390	......	450	......	......

NOTE.— Daily discharge is determined from a discharge rating curve well defined below discharge of 70,000 second-feet. Discharge, February 11 to 15, is estimated from discharge at Riegelsville. For all other periods the daily discharge is assumed unaffected by ice.

All determinations have been revised by means of a new discharge rating curve and this table supersedes that for 1910 published on page 691 of the State Engineer's report for 1910.

Mean Daily Discharge, Second-feet, of Delaware River at Port Jervis, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	3,800	4,970	2,200	18,000	6,620	1,570	2,260	665	4,100	2,260	4,670	7,730
2	4,380	2,450	2,300	9,780	6,620	1,570	1,900	665	3,570	3,320	6,270	5,280
3	13,000	2,080	2,450	8,120	6,270	1,900	1,730	665	1,730	6,620	5,280	4,970
4	27,500	1,900	2,450	7,350	5,600	1,730	1,420	665	1,900	5,280	4,380	4,380
5	14,600	3,320	2,260	7,730	5,280	1,570	1,420	590	1,570	4,100	4,380	4,380
6	11,600	4,380	2,080	12,100	4,670	1,900	1,280	665	1,420	3,570	3,830	4,100
7	8,930	3,080	1,570	29,000	4,100	2,650	1,280	740	1,570	4,100	4,670	4,100
8	7,350	2,650	1,570	31,200	3,320	3,080	1,280	740	3,570	6,620	5,280	3,830
9	6,270	2,650	1,280	21,800	3,080	3,080	1,570	740	3,080	5,600	4,970	3,830
10	5,280	3,080	1,570	17,400	2,650	2,650	1,280	920	2,860	5,280	4,380	3,570
11	4,100	3,080	2,450	15,700	2,450	2,860	1,150	825	4,970	4,380	4,100	3,570
12	3,830	2,650	2,450	14,100	2,260	7,350	1,030	665	4,100	3,830	3,570	3,830
13	4,970	2,260	3,570	12,100	2,260	28,200	1,030	590	3,080	4,100	3,570	3,830
14	4,970	2,080	4,970	11,100	2,080	30,500	920	520	3,080	3,570	6,620	3,830
15	11,600	1,730	6,980	19,200	1,900	21,200	825	520	2,650	3,080	5,600	3,830
16	9,000	1,730	6,980	19,800	2,650	14,100	740	520	2,080	2,860	4,970	5,280
17	7,000	1,730	6,620	16,200	2,650	12,100	740	520	2,080	3,320	4,970	8,930
18	5,280	2,450	5,600	12,500	2,260	10,700	825	590	1,900	3,320	4,970	8,930
19	4,380	2,450	4,970	11,600	2,860	8,120	825	590	1,420	14,600	10,700	7,350
20	4,380	2,260	4,970	11,100	2,860	6,270	825	520	1,570	13,500	10,700	6,270
21	4,380	2,650	4,380	17,400	2,650	4,970	920	590	1,420	9,780	8,520	5,600
22	4,100	2,650	5,600	13,500	2,450	4,100	1,150	590	1,150	12,500	7,730	5,280
23	4,100	2,260	7,350	15,700	2,450	4,100	1,150	520	1,280	12,500	6,620	6,980
24	3,570	2,080	6,620	13,000	2,260	3,570	1,280	438	1,280	16,800	5,930	16,200
25	3,080	2,080	6,620	10,700	2,450	3,320	1,150	520	1,110	13,500	6,620	14,100
26	2,260	1,900	6,620	7,730	2,080	4,100	920	740	1,110	10,700	6,270	9,780
27	2,860	2,080	9,780	7,730	2,080	2,650	920	920	1,110	8,930	5,280	9,350
28	3,080	2,080	48,400	6,980	1,900	2,260	825	920	1,110	7,730	4,970	10,700
29	17,400	......	28,200	6,620	1,570	3,320	825	1,570	1,280	6,620	4,970	8,120
30	10,700	......	19,800	5,930	1,280	2,860	740	3,830	1,730	5,930	6,980	6,270
31	9,350	......	19,200	......	1,280	......	740	4,380	......	4,670	......	5,930

Monthly Discharge of Delaware River at Port Jervis, N. Y.
[Drainage area, 3,250 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	50,100	....	6,260	1.93	2.22
February	9,780	1,420	3,890	1.20	1.25
March	67,300	5,930	19,600	6.03	6.95
April	37,300	3,320	8,850	2.72	3.04
May	12,500	2,260	5,420	1.67	1.92
June	6,620	1,900	4,040	1.24	1.38
July	1,900	520	990	0.305	0.35
August	2,450	390	709	0.218	0.25
September	1,570	390	752	0.231	0.26
October	740	225	413	0.127	0.15
November	3,320	450	1,520	0.468	0.52
December	....	....	1,500	0.462	0.53

NOTE.— Discharge for periods during which ice existed is estimated from the discharge at Riegelsville.
Mean discharge, January 1 to 21, is estimated at 1,000 second-feet; practically constant.
Mean discharge, December 7 to 31, is estimated at 1,530 second-feet; nearly constant.
Determinations of discharge are made by means of a new discharge rating curve and supersede those published on page 691 of the State Engineer's report for 1910.

Monthly Discharge of Delaware River at Port Jervis, N. Y.
[Drainage area, 3,250 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	27,500	2,260	7,330	2.26	2.61
February	4,970	1,730	2,530	0.778	0.81
March	48,400	1,280	7,480	2.30	2.65
April	31,200	5,930	13,700	4.22	4.71
May	6,620	1,280	3,060	0.942	1.09
June	30,500	1,570	6,610	2.03	2.26
July	2,260	740	1,130	0.348	0.40
August	4,380	438	901	0.277	0.32
September	4,970	1,110	2,160	0.665	0.74
October	16,800	2,260	6,870	2.11	2.43
November	10,700	3,570	5,730	1.76	1.96
December	16,200	3,570	6,460	1.99	2.29

NOTE.— Comparison of the discharge at Port Jervis with the discharge at Riegelsville and at Hancock indicates that these records are exceptionally good.

EAST BRANCH, DELAWARE RIVER, AT HANCOCK, N. Y.

This station was established October 14, 1902, by Robert E. Horton, and has since been maintained by the U. S. Geological Survey in coöperation with this Department. It is located at the highway bridge one-half mile southeast of the Erie railroad

station at Hancock, N. Y., and one mile above the junction with West branch of the Delaware. The Erie railroad bridge is just below the station.

The channel is straight for 600 feet above and 300 feet below the station. The current is swift. Both banks are of medium height and are not liable to overflow. The bed of the stream is composed of rocks and gravel. There are three channels at low water and five channels at high water. During low water the elevation of the water-surface at the station is lower than the water surface on West branch of the Delaware, but the gage heights are probably not affected by backwater from West branch, as there is considerable fall between the gaging station and the junction of the branches.

Discharge measurements are made from the downstream side of the five-span iron highway bridge to which the gage is attached. The bridge has a total span of 425.5 feet between abutments. The initial point for soundings is the face of the right abutment at the top.

A standard chain gage is attached to the lower chord of the second span from the left end of the bridge on the upstream side. It was installed July 21, 1903, to replace the old wire gage. The gage datum was not changed. The length of the chain from the end of the weight to the marker is 32.43 feet. The gage is read twice each day by D. B. Van Etten. The bench-mark is a circular chisel draft on the top of the left abutment on the downstream side. It is marked "B. M." Its elevation is assumed to be 100.00. The elevation of the top of the gage pulley is 104.47. The elevation of water-surface, when the gage reads zero, is 72.07.

Mean Daily Gage Height, in Feet, of East Branch, Delaware River, at Hancock, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	4.1	4.1	4.9	4.9	4.1	3.0	3.1	2.6	3.1	3.2	4.3	4.3
2......	4.5	4.0	4.8	4.5	4.3	3.1	3.0	2.6	3.0	3.9	4.1	4.2
3......	7.5	3.7	4.9	4.3	4.3	3.0	3.0	2.6	2.9	4.1	3.9	4.1
4......	7.1	5.1	5.0	4.2	4.1	2.9	3.0	2.6	2.8	3.9	3.8	4.0
5......	5.6	5.3	5.1	4.2	4.0	2.9	2.9	2.5	2.7	3.9	3.8	3.9
6......	4.9	5.2	5.2	6.4	3.8	3.1	2.9	2.5	3.0	3.8	3.8	3.9
7......	4.7	5.3	5.0	8.0	3.8	3.3	3.2	2.7	4.0	4.0	4.1	3.8
8......	4.5	5.2	4.8	7.3	3.7	3.2	3.1	2.7	3.5	4.4	4.0	3.8
9......	4.3	5.1	4.7	6.5	3.6	3.1	3.0	2.6	3.5	4.3	3.9	3.7
10......	4.0	5.1	4.8	5.7	3.6	3.0	2.9	2.6	4.1	4.0	3.8	3.7
11......	4.2	5.0	4.6	5.5	3.5	3.2	2.9	2.5	3.8	3.9	3.8	3.8
12......	4.0	4.8	4.7	5.3	3.5	6.7	2.8	2.5	3.7	3.8	3.7	3.7
13......	4.2	4.9	4.6	5.2	3.5	7.8	2.7	2.5	3.5	3.7	4.6	3.8
14......	4.4	5.2	4.8	5.3	3.5	6.9	2.7	2.5	3.4	3.6	4.3	3.8
15......	5.0	5.3	5.1	7.2	3.4	5.6	2.7	2.5	3.3	3.5	4.2	3.8
16......	4.6	5.2	4.8	6.4	3.3	5.1	2.7	2.5	3.2	3.5	4.2	4.0
17......	3.9	5.3	4.1	5.7	3.3	5.0	2.7	2.5	3.2	3.4	4.1	4.5
18......	4.4	5.4	4.2	5.2	3.3	4.5	2.8	2.4	3.1	3.4	4.1	4.3
19......	4.6	5.5	4.1	4.9	3.4	4.3	2.7	2.5	3.1	5.4	5.3	4.2
20......	4.6	5.4	4.1	5.1	3.3	4.0	2.3	2.5	3.0	4.9	4.7	4.0
21......	4.4	5.3	4.3	5.2	3.2	3.9	2.7	2.5	3.0	4.5	4.6	4.0
22......	4.5	5.2	4.1	5.1	3.2	3.7	2.7	2.5	3.0	4.8	4.4	4.0
23......	4.3	5.1	5.2	5.0	3.2	3.7	2.6	2.5	3.0	5.3	4.2	4.6
24......	4.2	4.9	5.3	4.8	3.2	3.5	2.7	2.4	3.0	5.5	4.2	5.6
25......	4.1	4.9	5.2	4.6	3.3	3.4	2.6	2.4	3.0	5.0	4.3	4.9
26......	4.2	4.7	5.2	4.5	3.2	3.3	2.7	2.6	2.9	4.6	4.1	4.6
27......	4.3	4.9	5.9	4.4	3.1	3.3	2.6	2.7	2.9	4.3	4.0	4.6
28......	6.0	5.0	9.2	4.3	3.0	3.3	2.6	2.7	2.9	4.2	3.9	4.7
29......	5.4	......	6.3	4.3	3.0	3.4	2.6	3.1	2.9	4.1	4.4	4.2
30......	4.6	......	6.2	4.2	2.9	3.3	2.6	3.9	3.2	4.0	4.5	4.1
31......	4.4	......	5.4	......	2.9	......	2.6	3.4	......	3.9	......	4.2

NOTE.— Relation of gage height to discharge was affected by ice, January 7 to 13, 18 to 27, and February 4 to March 26. The observer stated that the river was frozen March 25. It is probable that gage heights were slightly affected by backwater from ice during other periods in January.

Current-meter Discharge Measurement of East Branch, Delaware River, at Hancock, N. Y.

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Corrected discharge.
			Square feet.	*Feet.*	*Second-feet.*
1911.					
June 19......	G. S. De Golyer...............	4.25	804	302	2,130

Mean Daily Discharge, Second-feet, of East Branch, Delaware River, at Hancock, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1	......	1,570	19,200	4,290	3,800	1,400	525	198	113	248	153	620
2	......	1,750	16,200	3,570	3,120	1,240	525	198	113	248	153	620
3	......	1,400	12,300	3,120	3,120	1,240	440	198	113	248	153	620
4	......	1,240	9,290	2,490	3,340	965	440	198	525	198	198	525
5	......	......	7,040	2,490	2,690	840	367	304	840	198	248	......
6	......	......	6,730	2,300	2,490	1,100	367	248	725	198	367	......
7	......	......	9,620	2,300	2,110	1,930	367	248	840	198	525	......
8	......	......	9,290	2,900	1,930	1,400	367	198	725	198	525	......
9	......	......	6,430	2,900	1,930	1,100	304	198	525	198	440	......
10	......	......	5,050	2,300	1,750	1,100	304	198	440	198	440	......
11	......	......	4,040	1,930	1,400	1,240	367	304	367	113	725	......
12	......	......	3,570	2,110	1,240	1,930	367	367	304	113	1,400	......
13	......	......	3,120	2,490	1,240	1,750	304	304	367	153	1,100	......
14	......	......	3,340	1,930	1,100	1,570	248	248	304	153	965	......
15	......	......	2,900	1,750	965	1,400	248	198	440	153	955	......
16	......	......	2,490	1,930	965	1,240	248	198	367	153	840	......
17	......	......	2,690	1,570	840	1,750	304	153	367	153	725	......
18	......	......	2,110	1,570	840	1,570	304	153	248	153	725	......
19	......	......	2,110	5,860	965	2,300	248	198	248	153	725	......
20	......	......	2,490	3,800	840	1,930	248	304	248	153	620	......
21	......	......	4,290	3,340	725	1,400	248	248	198	153	620	......
22	31,600	......	4,290	2,900	965	1,240	248	198	198	198	525	......
23	13,000	......	3,800	2,690	840	1,100	248	198	198	198	525	......
24	7,040	......	5,050	2,300	725	965	248	198	198	198	525	......
25	4,790	......	6,430	2,300	1,400	840	248	153	248	153	620	......
26	3,570	......	9,950	6,730	3,340	725	198	153	304	153	725	......
27	2,900	......	7,360	12,300	2,490	725	198	153	304	153	620	......
28	2,490	12,300	5,580	7,040	2,300	725	248	153	304	153	620	......
29	2,300	......	5,050	5,310	1,750	840	248	153	304	153	620	......
30	1,750	......	5,310	4,790	1,570	725	248	113	304	153	620	......
31	1,750	......	5,050	......	1,400	......	248	113	......	153	......	......

NOTE.— This table supersedes that for 1910 published on page 694 of the State Engineer's report for 1910. No revision is made in daily discharge, January 22–31 and February 28 to December 4. Daily discharge, January 21, February 21–27 and December 5–10, has been revised but is not published; February 1–4, not previously published.

Mean Daily Discharge, Second-feet, of East Branch, Delaware River, at Hancock, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	1,930	1,930	600	3,570	1,930	440	525	198	525	620	2,300	2,300
2	2,690	1,750	600	2,690	2,300	525	440	198	440	1,570	1,930	2,110
3	11,300	1,240	600	2,300	2,300	440	440	198	367	1,930	1,570	1,930
4	9,950	......	500	2,110	1,930	367	440	198	304	1,570	1,400	1,750
5	5,310	......	400	2,110	1,750	367	367	153	248	1,570	1,400	1,570
6	3,570	......	350	7,680	1,400	525	367	153	440	1,400	1,400	1,570
7	2,400	......	350	13,000	1,400	725	620	248	1,750	1,750	1,930	1,400
8	1,800	......	300	10,600	1,240	620	525	248	965	2,490	1,750	1,400
9	1,400	......	300	8,000	1,100	525	440	198	965	2,300	1,570	1,240
10	1,000	......	450	5,580	1,100	440	367	198	1,930	1,750	1,400	1,240
11	900	......	600	5,050	965	620	367	153	1,400	1,570	1,400	1,400
12	1,200	......	900	4,540	965	8,640	304	153	1,240	1,400	1,240	1,240
13	1,200	......	1,000	4,290	965	12,300	248	153	965	1,240	2,900	1,400
14	2,490	......	1,200	4,540	965	9,290	248	153	840	1,100	2,300	1,400
15	3,800	......	1,500	10,300	840	5,310	248	153	725	965	2,110	1,400
16	2,900	......	1,400	7,680	725	4,040	248	153	620	965	2,110	1,750
17	1,570	......	1,200	5,580	725	3,800	248	153	620	840	1,930	2,690
18	1,200	......	1,100	4,290	725	2,690	304	113	525	840	1,930	2,300
19	1,000	......	900	3,570	840	2,300	248	153	525	4,790	4,540	2,110
20	900	......	900	4,040	725	1,750	80	153	440	3,570	3,120	1,750
21	900	......	900	4,290	620	1,570	248	153	440	2,690	2,900	1,750
22	800	......	1,600	4,040	620	1,240	248	153	440	3,340	2,490	1,750
23	800	......	3,000	3,800	620	1,240	198	153	440	4,540	2,110	2,900
24	700	......	3,000	3,340	620	965	248	113	440	5,050	2,110	5,310
25	600	......	2,000	2,900	725	840	198	113	440	3,800	2,300	3,570
26	600	......	2,000	2,690	620	725	248	198	367	2,900	1,930	2,900
27	600	......	6,140	2,490	525	725	198	248	367	2,300	1,750	2,900
28	6,430	......	17,300	2,300	440	725	198	248	367	2,110	1,570	3,120
29	4,790	......	7,360	2,300	440	840	198	525	367	1,930	2,490	2,110
30	2,900	......	7,040	2,110	367	725	198	1,570	620	1,750	2,690	1,930
31	2,490	......	4,790	......	367	......	198	840	......	1,570	......	2,110

NOTE.— Daily discharge is determined from a well-defined discharge rating curve. Discharge, January 7 to 13, 18 to 27 and March 1 to 26, is estimated from climatological records and the discharge at Port Jervis.

Monthly Discharge of East Branch, Delaware River, at Hancock, N. Y.
[Drainage area, 920 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	31,600	....	2,480	2.700	3.11
February	12,300	....	1,880	2.040	2.12
March	19,200	2,110	6,200	6.740	7.77
April	12,300	1,570	3,440	3.740	4.17
May	3,800	725	1,750	1.910	2.20
June	2,300	725	1,280	1.390	1.55
July	525	198	307	0.334	0.39
August	367	113	208	0.226	0.26
September	840	113	359	0.390	0.44
October	248	113	174	0.189	0.22
November	1,400	153	600	0.652	0.73
December	....	....	450	0.489	0.56
The year	31,600	113	1,590	1.730	23.52

NOTE.— Discharge for periods during which ice existed is estimated from discharge at Port Jervis and Riegelsville.
Mean discharge, January 1 to 21, is estimated at 270 second-feet; nearly constant.
Mean discharge, February 5 to 27, is estimated at 1,050 second-feet; slight variation.
Mean discharge, December 5 to 31, is estimated at 427 second-feet; nearly constant.
Part of the data presented in the above table is revised and supersedes that published on page 695 of the State Engineer's report for 1910.

Monthly Discharge of East Branch, Delaware River, at Hancock, N. Y.
[Drainage area, 920 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	11,300	....	2,580	2.810	3.24
February	....	....	650	0.706	0.74
March	17,300	....	2,270	2.470	2.85
April	13,000	2,110	4,730	5.140	5.74
May	2,300	367	995	1.080	1.24
June	12,300	367	2,180	2.370	2.64
July	620	80	305	0.332	0.38
August	1,570	113	251	0.273	0.31
September	1,930	248	671	0.729	0.81
October	5,050	620	2,140	2.330	2.69
November	4,540	1,240	2,090	2.270	2.53
December	5,310	1,240	2,070	2.250	2.59

NOTE.— Discharge for February is estimated from climatological records and the discharge at Port Jervis.

WEST BRANCH, DELAWARE RIVER, AT HANCOCK, N. Y.

This station was established October 15, 1902, by Robert E. Horton, and has since been maintained by the U. S. Geological Survey in coöperation with this Department. It is located one-half mile west of the Erie railroad station at Hancock, N. Y., and about one mile above the mouth of east branch.

The channel is straight for 400 feet above and 800 feet below the bridge. The current is swift. Both banks are high and rocky and are not subject to overflow. The bed of the stream is composed of earth and cobblestones.

Discharge measurements are made from the downstream side of the bridge, at which the gage is located. The bridge has a single span of 235 feet. The initial point for soundings is the top of the face of the left abutment on the downstream side. The bridge floor is marked at intervals of five feet with black paint.

The original wire gage was attached to the upstream side of the bridge. It was replaced July 20, 1903, by a standard chain gage. The location and the gage datum were not changed. The length of the chain from the end of the weight to the marker is 30.44 feet. The gage is read twice each day by David Pulver, the collector of tolls at the bridge. The bench-mark is a circular chisel draft on the upstream corner of the left abutment. Its elevation is assumed at 100.00. The elevation of the top of the pulley is 106.29. The elevation of water-surface, when the gage reads zero, is 75.75.

Mean Daily Gage Height, in Feet, of West Branch, Delaware River, at Hancock, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	4.3	3.8	4.8	4.8	3.9	2.9	3.3	2.7	3.1	2.8	4.5	4.0
2	5.1	4.1	3.9	4.4	3.8	3.0	3.2	2.6	2.9	3.7	4.2	4.0
3	8.0	3.8	4.1	4.2	4.0	2.8	3.1	2.5	2.9	3.6	4.0	3.9
4	6.8	3.5	3.8	4.2	3.8	2.8	2.9	2.5	2.9	3.3	3.8	3.7
5	5.4	4.4	3.8	4.3	3.7	3.0	3.0	2.5	2.8	3.4	3.7	3.7
6	5.0	5.8	3.5	6.9	3.6	3.2	2.9	3.0	3.5	3.2	4.0	3.5
7	4.8	4.1	3.4	7.6	3.5	3.3	3.3	3.3	3.6	3.9	3.9	3.5
8	4.5	4.5	3.1	6.8	3.4	3.2	3.1	3.8	3.3	3.8	3.9	3.5
9	4.5	5.1	3.1	6.2	3.4	3.0	2.8	2.7	3.0	3.8	3.8	3.7
10	4.0	5.1	3.2	5.6	3.3	3.0	2.9	2.6	4.5	3.6	3.7	3.6
11	3.9	4.4	3.3	5.5	3.3	2.9	2.9	2.7	4.1	3.5	3.8	3.8
12	4.2	3.9	3.7	5.3	3.3	5.3	2.7	2.6	3.9	3.6	4.0	3.8
13	4.8	4.0	3.9	5.0	3.4	6.3	2.7	2.5	3.7	3.5	4.0	3.8
14	5.0	4.3	4.4	5.1	3.3	6.2	2.6	2.6	3.4	3.3	3.9	4.0
15	5.8	4.0	5.8	6.2	3.2	5.4	2.6	2.5	3.3	3.3	3.9	4.0
16	4.8	3.8	4.5	5.7	3.1	5.1	2.5	2.6	3.2	3.2	3.7	4.4
17	4.1	3.8	4.1	5.3	3.1	4.9	2.7	2.5	3.0	3.0	4.1	4.9
18	3.9	4.1	4.1	5.0	3.1	4.7	2.8	2.5	3.1	3.7	5.4	4.7
19	3.6	4.5	3.8	4.7	3.2	4.4	2.7	2.7	3.0	4.9	4.6	4.5
20	4.0	4.1	3.6	4.9	3.1	4.1	2.6	2.5	3.0	4.7	4.3	4.1
21	4.2	4.1	3.6	4.8	3.1	3.9	2.7	2.5	2.9	4.3	4.4	4.0
22	3.9	4.3	4.0	4.9	3.1	3.9	2.5	2.5	2.9	4.3	4.0	4.0
23	3.7	4.3	4.6	4.9	3.0	3.4	2.5	2.5	2.9	5.5	4.1	5.5
24	3.5	4.0	4.6	4.6	3.0	3.3	2.7	2.5	2.8	5.3	4.2	5.6
25	3.6	4.1	3.9	4.4	3.4	3.3	2.9	2.5	2.9	4.8	4.0	5.0
26	3.4	3.8	4.3	4.3	3.2	3.2	2.7	2.7	2.8	4.5	3.8	4.8
27	3.4	3.9	6.8	4.1	3.1	3.0	2.7	2.7	2.7	4.3	4.2	4.9
28	6.9	4.6	8.8	4.1	3.1	3.6	2.7	2.9	2.7	4.2	4.1	4.7
29	5.8	......	6.2	4.0	3.0	3.4	2.4	3.0	2.7	4.0	4.0	4.0
30	5.2	......	5.1	3.9	3.0	3.2	2.6	3.3	2.9	3.8	4.0	3.8
31	4.0	......	5.4	......	2.9	......	2.6	3.2	......	3.8	......	3.8

NOTE.— Relation of gage height to discharge was affected by ice, January 7 to 13, 20 to 27 and about February 1 to March 19. The gage height may also have been slightly affected by ice at other times during January and March.

Current-meter Discharge Measurements of West Branch, Delaware River, at Hancock, N. Y.

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Corrected discharge.
			Square feet.	*Feet.*	*Second-feet.*
1911.					
June 17......	C. S. De Golyer...............	5.21	758	219	2,360
June 19......	C. S. De Golyer...............	4.44	598	212	1,360

Mean Daily Discharge, Second-feet, of West Branch, Delaware River, at Hancock, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1.....	......	845	19,500	1,470	1,990	1,850	400	83	60	110	41	295
2.....	......	845	14,400	1,130	1,590	1,350	295	110	60	110	60	250
3.....	......	755	9,020	1,030	1,720	1,130	400	110	60	41	41	295
4.....	......	670	6,500	935	1,590	935	295	83	175	83	41	295
5.....	......	......	5,150	845	1,470	755	295	83	295	83	110	250
6.....	......	......	4,680	845	1,130	1,350	210	83	250	60	210	250
7.....	......	......	9,020	755	1,030	1,470	140	60	345	60	295	......
8.....	......	......	6,210	1,030	1,130	1,350	210	83	210	60	250	......
9.....	......	......	4,220	845	1,030	1,130	175	110	175	60	175	......
10.....	......	......	3,150	755	1,470	1,030	210	83	140	60	175	......
11.....	......	......	2,130	755	1,130	1,030	140	140	140	60	845	......
12.....	......	......	1,990	670	1,130	1,470	175	110	83	60	935	......
13.....	......	......	1,850	1,030	935	1,470	140	110	83	41	525	......
14.....	......	......	1,850	845	845	1,130	110	110	110	60	525	......
15.....	......	......	1,590	670	755	1,030	110	83	110	83	460	......
16.....	......	......	1,240	755	755	935	83	83	83	60	400	......
17.....	......	......	1,350	595	670	1,030	140	83	175	41	345	......
18.....	......	......	935	670	595	935	140	60	83	60	295	......
19.....	......	......	1,030	1,130	595	1,850	110	83	60	41	295	......
20.....	......	......	1,350	1,240	595	1,030	83	60	60	60	525	......
21.....	......	......	2,130	1,130	525	845	83	60	83	60	175	......
22.....	21,100	......	2,440	1,030	460	670	140	110	83	41	295	......
23.....	8,690	......	2,130	1,030	460	595	140	60	60	60	250	......
24.....	4,220	......	2,440	935	400	525	140	60	60	60	250	......
25.....	2,440	......	3,150	1,130	1,130	400	110	83	83	60	295	......
26.....	3,560	......	3,560	1,850	4,220	345	140	83	110	60	345	......
27.....	1,590	......	3,150	4,000	2,780	345	110	60	83	60	345	......
28.....	1,470	8,000	2,280	3,150	2,780	345	140	60	140	60	295	......
29.....	1,130	......	1,850	2,280	1,720	400	110	60	110	83	295	......
30.....	525	......	1,850	2,280	1,350	345	140	60	140	41	295	......
31.....	935	......	1,470	......	1,470	......	110	60	......	41	......	......

NOTE.— Daily discharge is determined from a discharge rating curve fairly well defined. It is assumed that the discharge was unaffected by ice, except on February 28, for which date the discharge is estimated from the discharge of the East branch of Delaware river.

All determinations are revised on the basis of a new discharge rating curve, superseding those published on page 697 of the State Engineer's report for 1910.

Mean Daily Discharge, Second-feet, of West Branch, Delaware River, at Hancock, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	1,240	......	400	1,850	845	210	400	140	295	175	1,470	935
2	2,280	......	400	1,350	755	250	345	110	210	670	1,130	935
3	9,700	......	400	1,130	935	175	295	83	210	595	935	845
4	5,930	......	350	1,130	755	175	210	83	210	400	755	670
5	2,780	......	350	1,240	670	250	250	83	175	460	670	670
6	2,130	......	300	6,210	595	345	210	250	525	345	935	525
7	1,600	......	250	8,360	525	400	400	400	595	845	845	525
8	1,200	......	200	5,930	460	345	295	755	400	755	845	525
9	900	......	200	4,450	460	250	175	140	250	755	755	670
10	700	......	300	3,150	400	250	210	110	1,470	595	670	595
11	600	......	400	2,960	400	210	210	140	1,030	525	755	755
12	800	......	600	2,610	400	2,610	140	110	845	595	935	755
13	800	......	700	2,130	460	4,680	140	83	670	525	935	755
14	2,130	......	800	2,280	400	4,450	110	110	460	400	845	935
15	3,560	......	1,000	4,450	345	2,780	110	83	400	400	845	935
16	1,850	......	900	3,350	295	2,280	83	110	345	345	670	1,350
17	1,030	......	800	2,610	295	1,990	140	83	250	250	1,030	1,990
18	845	......	700	2,130	295	1,720	175	83	295	670	2,780	1,720
19	595	......	600	1,720	345	1,350	140	140	250	1,990	1,590	1,470
20	600	......	595	1,990	295	1,030	110	83	250	1,720	1,240	1,030
21	600	......	595	1,850	295	845	140	83	210	1,240	1,350	935
22	500	......	935	1,990	295	845	83	83	210	1,240	935	935
23	500	......	1,590	1,990	250	460	83	83	210	2,960	1,030	2,960
24	400	......	1,590	1,590	250	400	140	83	175	2,610	1,130	3,150
25	400	......	845	1,350	460	400	210	83	210	1,850	935	2,130
26	350	......	1,240	1,240	345	345	140	140	175	1,470	755	1,850
27	400	......	5,930	1,030	295	250	140	140	140	1,240	1,130	1,990
28	6,210	......	12,600	1,030	295	595	140	210	140	1,130	1,030	1,720
29	3,560	......	4,450	935	250	460	60	250	140	935	935	935
30	2,440	......	2,280	845	250	345	110	400	210	755	935	755
31	935	......	2,780	......	210	......	110	345	......	755	......	755

NOTE.— Daily discharge is determined from a fairly well-defined discharge rating curve. Discharge, January 7 to 13, 20 to 27 and March 1 to 19, is estimated from climatological records and the discharge at Port Jervis.

Monthly Discharge of West Branch, Delaware River, at Hancock, N. Y.

[Drainage area, 680 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	21,100	....	1,590	2.340	2.70
February	8,000	....	972	1.430	1.49
March	19,500	935	3,990	5.870	6.77
April	4,000	595	1,230	1.810	2.02
May	4,220	400	1,270	1.870	2.16
June	1,850	345	969	1.430	1.69
July	400	83	169	0.249	0.29
August	140	60	82.8	0.122	0.14
September	345	60	124	0.182	0.20
October	110	41	61.9	0.091	0.10
November	935	41	313	0.460	0.51
December	....	....	295	0.434	0.50

NOTE.— Discharge for periods during which ice existed is computed from the discharge of Delaware river at Port Jervis and at Riegelsville.

Mean discharge, January 1 to 21, is estimated at 180 second-feet; practically constant.

Mean discharge, February 5 to 27, is estimated at 700 second-feet; slight variation.

Mean discharge, December 7 to 31, is estimated at 300 second-feet; nearly constant.

Determinations for this station published on page 698 of the State Engineer's report for 1910 have been revised by means of a new discharge rating curve.

Monthly Discharge of West Branch, Delaware River, at Hancock, N. Y.
[Drainage area, 680 square miles.]

MONTH.	Discharge in Second-feet.				Run-off.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	9,700	350	1,860	2.740	3.16
February	....	....	450	0.662	0.69
March	12,600	200	1,450	2.130	2.46
April	8,360	845	2,500	3.680	4.11
May	845	210	423	0.622	0.72
June	4,680	175	1,020	1.500	1.67
July	400	60	178	0.262	0.30
August	755	83	164	0.241	0.28
September	1,470	140	365	0.537	0.60
October	2,960	175	942	1.390	1.60
November	2,780	670	1,030	1.510	1.68
December	3,150	670	1,180	1.740	2.01

NOTE.— Discharge for February is estimated from climatological records and the discharge a Port Jervis.

NEVERSINK RIVER DRAINAGE BASIN.

DESCRIPTION.

The Neversink river is formed by the confluence of the east and west branches of Neversink creek, in the western part of Ulster county. It flows in a southerly direction across the counties of Sullivan and Orange into Delaware river at Port Jervis.

Its principal tributaries are Sheldrake creek, coming in from the west through a chain of lakes and joining the river at Thompsonville, about 25 miles from the mouth, and Bush kill, a small tributary from the same side, joining at Oakland Valley, some 12 miles farther downstream. From the east the Brasher kill, a tributary of considerable importance, formed by the Pine kill and Garmaeu, flows into the Neversink near Godeffroy, about 9 miles from Port Jervis and just above the gaging station, which is located at the suspension highway bridge at this point.

The river drains a narrow valley along the southern slope of the Catskill mountains. There are several reservoirs in the upper watershed, two of which are now in use. The principal power is located at Rose's Point, near Cuddybackville, in the vicinity of the old Delaware and Hudson canal. About one-half mile above this point is a low concrete dam, which diverts water through the old feeder ditch to the plant. This plant supplies Port Jervis, Middletown and other small places in the vicinity with electric light and power.

NEVERSINK RIVER AT GODEFFROY, N. Y.

This station is located at the suspension highway bridge about one-half mile east of the town of Godeffroy and eight miles above the mouth of the river. A staff gage was established at this point, August 4, 1903, and was washed out October 9, in the same year. A new gage was established August 22, 1909, to obtain general statistical and comparative data regarding the flow of the Neversink, and this is maintained by U. S. Geological Survey in co-operation with the State Engineer's Department. This was an enameled iron staff gage bolted to the river face, downstream side of the left-hand abutment. This gage was removed by floods in January, 1910; replaced by chain gage fastened to cantilever arm on left-hand downstream tower on August 1, 1910. Length of chain, 20.50 feet, making datum same as for old gage.

Bench-mark No. 1 is on the outer corner base stone, right-hand downstream tower, marked with crow's-foot and circle; elevation, 15.996. Bench-mark No. 2 is a spike in a birch tree 14 inches in diameter, blazed 3 feet above the ground, on left-hand side of west approach to bridge, 10 feet from upstream tower; elevation 16.140. Both points are referred to zero of the gage. The datum of the new gage is 0.98 foot lower than the gage of 1903. Therefore all previously published gage heights for this station should have 0.98 foot added, in order to apply to the present datum. The new gage datum has remained the same during the maintenance of the station. Conditions are good for accurate discharge measurements during the open-water period, except for extreme lower water, when wading measurements have to be resorted to, or a bridge about one mile farther downstream used. Area of drainage basin above station is 314.4* square miles; area above mouth, 346* square miles.

Daily gage heights and discharge for this station are withheld, pending further investigations regarding diurnal fluctuations due to operation of mills and power plants above.

* From Bien's Atlas of New York State.

Current-meter Discharge Measurements of Neversink River at Godeffroy, N. Y.

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Corrected discharge.
			Square feet.	*Feet.*	*Second-feet.*
1911.					
June 20	C. S. De Golyer	3.74	528	156	48.6
July 21 *a*	C. S. De Golyer	2.90	234	120	70.2
July 21 *a*	C. S. De Golyer	2.76	56	67	49.2
Oct. 11	C. C. Covert	3.77	563	157	50.7

a Measurement made by wading one-quarter mile above bridge.

MONGAUP RIVER DRAINAGE BASIN.

DESCRIPTION.

The Mongaup river rises near the village of Bradley in Liberty township, Sullivan county. It flows in a southerly direction through Sullivan county to the Delaware river, into which it empties near the village of Mongaup, about 6 miles northwest of Port Jervis.

The stream has a rather narrow, precipitious, well-timbered drainage basin, which is cut up by numerous small tributaries that form outlets to the various small lakes which characterize this drainage. Among the more important of these tributaries are Middle Mongaup, which joins near Bushville; West Mongaup, which joins near Mongaup Valley, and Black Lake creek, about 6 miles farther downstream. These tributaries are all from the right, while from the left enters Kinne brook, about 3 miles below Mongaup Valley, and Black brook, some 8 or 10 miles farther downstream. The last six or seven miles of the stream's course are along the boundary line between Orange and Sullivan counties.

Throughout its course the stream is very precipitious and it offers several opportunities for power development, the most important of which is Mongaup falls, some 8 or 10 miles above the mouth.

MONGAUP RIVER NEAR RIO, N. Y.

This station is located at the steel highway bridge near Partridge Ranch, about six miles above Mongaup village and about fourteen miles from Port Jervis, N. Y. A standard chain gage was established at this point, December 8, 1906, to obtain general statistical and comparative data regarding the flow of the Mongaup. This station is maintained by Charles H. Cooke, C. E., of New York city, in coöperation with the U. S. Geological Survey and the State Engineer's Department of New York. On

account of inability to obtain reliable gage readings, earlier observations at this station have not been published.

The chain has a length of 15.14 feet and is referred to the following bench-marks: No. 1, highest point on a large boulder about fifty feet south of the downstream side of the right abutment marked with the letters "B. M."; elevation 6.118. No. 2, a point on the bridge-seat on the downstream, right abutment; elevation 12.07.

The bridge has a span of 140 feet. There is one channel at all stages and measurements are made from the downstream side of the bridge. The channel above the station is straight for about 500 feet and during low and medium stages is divided into two parts by a small island just above the bridge. The channel below the bridge is straight for about 200 feet, when it makes an abrupt turn to the right. The banks on either side are of medium height and rarely overflow, except during extreme high stages. Conditions for measuring at this point are fairly good, except in low stages, when the current becomes rather sluggish. Low-water measurements are usually made by wading at the ripples below the bridge.

Mean Daily Gage Height, in Feet, of Mongaup River near Rio, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	......	1.46	......	2.70	1.50	1.19	1.18	0.79	1.46	1.19	1.50	1.55
2	......	1.40	......	2.60	1.70	1.12	1.08	0.73	1.23	2.05	1.48	1.60
3	......	1.20	......	1.80	1.75	1.08	1.00	0.77	1.03	1.65	1.39	1.42
4	......	1.41	......	1.75	1.70	0.98	1.02	0.79	0.90	1.50	1.34	1.38
5	......	......	......	1.90	1.60	0.98	0.99	0.79	1.12	1.39	1.32	1.49
6	......	......	......	2.80	1.50	1.14	0.96	0.78	1.09	1.35	1.32	1.45
7	......	......	......	2.60	1.44	1.29	1.19	0.84	1.00	1.70	1.60	1.50
8	......	......	......	2.45	1.40	1.25	1.08	0.83	1.02	0.60	1.45	1.65
9	......	......	......	2.25	1.40	1.15	0.95	0.81	1.04	0.55	1.44	1.50
10	......	......	......	2.40	1.38	1.05	0.95	0.75	1.27	1.49	1.35	1.50
11	......	......	......	2.40	1.34	2.40	0.94	0.73	1.06	1.34	1.31	1.45
12	......	......	1.25	2.20	1.30	2.80	0.90	0.71	1.00	1.28	1.31	1.50
13	......	......	1.50	2.10	1.28	4.20	0.88	0.67	0.86	0.18	1.90	1.48
14	......	......	1.80	3.20	1.26	3.60	0.89	0.71	0.85	1.14	1.60	1.48
15	......	......	2.15	3.50	1.24	2.80	0.89	0.67	0.79	1.11	1.55	1.70
16	......	......	2.30	2.70	1.22	2.40	0.85	0.70	0.87	1.10	1.55	2.10
17	......	......	1.90	2.35	1.20	2.20	0.90	0.64	0.86	1.08	1.49	2.30
18	......	......	1.80	2.15	1.26	1.95	0.95	0.66	0.85	1.48	2.20	2.00
19	......	......	1.65	2.00	1.28	1.60	0.89	0.66	0.83	2.50	2.45	1.75
20	......	......	1.60	2.70	1.19	1.60	0.82	0.66	0.79	2.20	2.15	1.55
21	......	......	1.70	2.50	1.11	1.50	0.85	0.68	0.77	2.15	1.90	1.60
22	......	......	2.60	2.30	1.08	1.45	0.84	0.62	0.78	2.60	1.80	1.90
23	......	......	2.05	3.00	1.06	1.45	0.77	0.70	0.82	3.00	1.75	2.25
24	......	......	2.10	2.40	1.04	1.38	1.17	0.60	0.79	2.50	1.65	2.50
25	......	......	2.15	2.20	1.05	1.28	1.25	0.80	0.82	2.20	1.95	2.40
26	......	......	2.40	1.95	1.02	1.22	1.08	0.99	0.83	2.00	1.80	2.70
27	......	......	3.10	1.80	1.00	1.26	0.94	0.78	0.81	1.85	1.70	2.60
28	......	......	3.80	1.70	0.94	1.36	0.91	0.86	0.85	1.70	1.60	2.50
29	1.90	......	2.80	1.55	0.91	1.25	0.87	1.48	0.85	1.65	1.75	1.95
30	1.65	......	3.00	1.60	0.95	1.20	0.79	1.75	1.37	1.60	1.70	1.60
31	1.50	......	2.60	......	0.98	......	0.79	1.70	......	1.50	......	1.60

NOTE.— No information is available regarding backwater from ice. The river probably was open and unaffected by ice, January 29 to February 4.

Current-meter Discharge Measurement of Mongaup River at Rio, N. Y.

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Corrected discharge.
1911.			*Square feet.*	*Feet.*	*Second-feet.*
Oct. 11.......	C. C. Covert..................	1.32	184	139	202

Mean Daily Discharge, Second-feet, of Mongaup River near Rio, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1.....	......	292	3,040	548	710	206	100	42	56	32	33	109
2.....	......	284	2,000	472	590	202	98	45	63	29	30	92
3.....	......	292	1,500	296	620	192	81	45	77	28	49	92
4.....	......	252	1,000	345	680	171	77	49	150	40	168	......
5.....	......	......	1,000	322	590	178	84	68	112	26	355	......
6.....	......	......	900	327	572	420	77	54	86	32	322	......
7.....	......	......	900	590	500	355	68	49	77	33	240	......
8.....	......	......	900	548	435	220	74	49	65	49	168	......
9.....	......	......	880	435	400	202	68	45	52	28	122	......
10.....	......	......	710	445	420	260	56	39	54	29	115	......
11.....	......	......	710	355	385	370	63	202	52	36	129	......
12.....	......	......	686	322	355	395	59	122	49	30	115	......
13.....	......	......	692	284	340	435	54	92	49	33	115	......
14.....	......	......	880	240	300	292	52	56	49	30	109	......
15.....	......	......	728	280	280	268	54	54	56	33	100	......
16.....	......	......	680	280	264	260	56	59	47	32	84	......
17.....	......	......	608	300	260	280	68	59	39	30	100	......
18.....	......	......	590	336	280	252	89	98	45	30	89	......
19.....	......	......	560	1,120	300	228	65	86	39	25	77	......
20.....	......	......	668	775	296	188	54	77	44	26	77	......
21.....	......	......	1,010	560	292	157	61	63	44	29	81	......
22.....	2,500	......	936	445	300	143	63	49	42	47	84	......
23.....	1,580	......	845	385	276	122	63	54	33	39	65	......
24.....	915	......	915	370	340	115	59	54	33	36	72	......
25.....	656	......	894	650	345	109	45	56	32	32	86	......
26.....	530	......	852	2,910	345	129	42	42	33	36	118	......
27.....	530	......	668	1,660	292	100	42	39	45	33	112	......
28.....	445	1,010	692	992	268	109	49	36	45	30	81	......
29.....	385	......	626	845	252	109	42	38	42	32	122	......
30.....	345	......	560	880	216	86	45	45	32	42	115	......
31.....	355	......	572	......	192	......	45	42	......	32	......	......

NOTE.— Daily discharge is determined from a rating curve well-defined below 1,000 second-feet. Discharge, January 22 and March 2 to 8, is estimated, because of probable backwater from ice jams. The relation of gage height to discharge may also have been affected by ice at other times during January and February and the first of March.

Determinations of discharge, February 5 to 27, March 2 to 8 and December 4 to 10, as published on page 705 of the State Engineer's report for 1910, have been revised.

Mean Daily Discharge, Second-feet, of Mongaup River near Rio, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	......	284	......	1,020	300	182	178	61	251	160	300	322
2	......	260	......	950	395	157	143	50	173	590	292	345
3	......	185	......	445	420	143	115	57	116	370	256	268
4	......	264	......	420	395	109	122	61	84	265	236	252
5	......	......	......	500	345	109	112	61	140	226	228	298
6	......	......	......	1,100	300	164	103	59	131	212	228	280
7	......	......	......	950	276	216	182	72	108	395	345	300
8	......	......	......	845	260	202	143	70	113	345	280	370
9	......	......	......	710	260	168	100	65	118	322	276	300
10	......	......	......	810	252	132	100	54	185	261	240	300
11	......	......	......	810	236	810	98	50	124	209	224	280
12	......	......	202	680	220	2,010	86	46	108	189	224	300
13	......	......	300	620	213	2,440	81	39	76	157	500	292
14	......	......	445	1,440	206	1,810	84	46	74	146	345	292
15	......	......	650	1,710	199	1,100	84	39	61	137	322	395
16	......	......	740	1,020	192	810	74	44	78	134	322	620
17	......	......	500	775	185	680	86	34	76	143	296	740
18	......	......	445	650	206	530	100	38	74	292	680	560
19	......	......	370	560	213	345	84	38	69	880	845	420
20	......	......	345	1,020	182	345	68	38	61	680	650	322
21	......	......	395	880	154	300	74	41	57	650	500	345
22	......	......	950	740	143	280	72	31	59	950	445	500
23	......	......	590	1,260	136	280	57	44	67	1,260	420	710
24	......	......	620	810	129	252	174	28	61	880	370	880
25	......	......	650	680	132	213	202	63	67	680	530	810
26	......	......	810	530	122	192	143	112	69	500	445	1,020
27	......	......	1,350	445	115	206	98	59	65	472	395	950
28	......	......	2,010	395	98	244	89	77	74	395	345	880
29	500	......	1,100	322	89	202	79	292	74	370	420	530
30	370	......	1,260	345	100	185	61	420	219	345	395	345
31	300	......	950	......	109	......	61	395	......	300	......	345

NOTE.— Daily discharge is determined from a discharge rating curve well-defined below 1,000 second-feet.

Monthly Discharge of Mongaup River near Rio, N. Y.
[Drainage area, 189 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	....	....	306	1.62	1.87
February	....	....	217	1.15	1.20
March	3,040	....	910	4.83	5.57
April	2,910	240	611	3.23	3.60
May	710	192	377	1.99	2.29
June	435	86	218	1.15	1.28
July	100	42	63	0.333	0.38
August	202	36	61.5	0.325	0.37
September	150	32	54.7	0.289	0.32
October	49	25	325	0.172	0.20
November	355	30	118	0.624	0.70
December	....	....	150	0.794	0.92

NOTE.— Discharge for periods during which ice was present is estimated by means of climatological records and the discharge at other stations in the Delaware river basin.
Mean discharge, January 1 to 21, is estimated at 60 second-feet; practically constant.
Mean discharge, February 5 to 27, is estimated at 200 second-feet; slightly variable.
Mean discharge, December 3 to 31, is estimated at 156 second-feet; nearly constant.
Some of the determinations in the above table are revisions of and supersede those published on page 705 of the State Engineer's report for 1910.

Monthly Discharge of Mongaup River near Rio, N. Y.
[Drainage area, 189 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	....	....	400	2.12	2.44
February	....	....	150	0.794	0.83
March	2,010	....	516	2.73	3.15
April	1,710	322	781	4.13	4.61
May	420	89	212	1.12	1.29
June	2,440	109	494	2.61	2.91
July	202	57	105	0.556	0.64
August	420	28	83.4	0.441	0.51
September	251	57	101	0.534	0.60
October	1,260	134	419	2.22	2.56
November	845	224	378	2.00	2.23
December	1,020	252	470	2.49	2.87

NOTE.— Discharge, January 1 to March 11, with the exception of January 29 to February 4, is estimated from climatological records and the discharge at Port Jervis.
Mean discharge, March 1, is estimated at 120 second-feet.

SUSQUEHANNA RIVER DRAINAGE BASIN.

DESCRIPTION OF SUSQUEHANNA RIVER.

Susquehanna river rises in Otsego lake, in northern Otsego county, N. Y., at an elevation of 1,193 feet above tide and flows in a general southerly direction into Chesapeake bay. Its course is in many places extremely tortuous, crossing the state boundary between New York and Pennsylvania three times. The entire length of the river is about 500 miles, and it drains an area of 27,400 square miles, of which 21,060 square miles lie in Pennsylvania, 6,080 in New York, and 260 in Maryland.

The topography of the basin varies widely in character. In New York the stream and its tributaries flow through a rolling and in places rather broken country. In this part of the course its bed is of gravel or sand, with occasional rock ledges, and its banks are moderately high and not extensively subject to overflow. In Pennsylvania the river enters a mountain region, its banks are high, and it winds and twists among the parallel ranges in a bed composed generally of drift materials, gravel, sand and boulders. In the lower part of its course, from Marietta to Harve de Grace, it occupies a broad, deep valley, varying in width from a few hundred feet to more than a mile, and it is for the most part bounded on either shore by rocky bluffs and table-lands elevated from 100 to 500 feet above its waters.

SUSQUEHANNA RIVER AT BINGHAMTON, N. Y.

This station was established July 31, 1901, by Robert E. Horton, and has since been maintained by the U. S. Geological Survey in coöperation with this Department. It is located at the Washington street bridge, about 800 feet upstream from the junction of Chenango and Susquehanna rivers.

On account of the unfavorable conditions produced by a rift, which extends diagonally across the stream underneath the Washington street bridge, discharge measurements are made at the Exchange street bridge, 1,900 feet upstream.

A standard chain gage is attached to the upstream side of the left span of the Washington street bridge. The gage is upstream from the crest of the rift and over a stretch of smooth water extending to the dam 2,800 feet above. Gage readings are unaffected by backwater from Chenango river at ordinary stages. The gage is read twice each day by William Ray Monroe. The bench-mark is a chisel draft on the corner of the left bridge abutment on the upstream side. Its assumed elevation is 100.00. The elevation of water-surface, when the gage reads zero, is 76.29.

Mean Daily Gage Height, in Feet, of Susquehanna River at Binghamton, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	4.4	3.5	3.15	5.4	2.9	2.26	2.34	1.92	2.16	2.24	3.1	3.5
2	5.1	3.15	2.8	4.7	3.15	2.38	2.26	1.94	2.16	2.6	3.35	3.4
3	8.6	3.35	2.65	4.3	3.6	2.28	2.24	1.92	2.09	2.5	3.25	3.2
4	8.3	2.9	2.6	4.1	3.35	2.28	2.18	1.90	2.05	2.43	3.0	2.95
5	6.3	3.0	2.85	4.8	3.15	2.19	2.19	1.92	2.01	2.43	2.8	2.7
6	4.6	2.8	2.35	8.8	2.95	2.30	2.25	1.92	2.00	2.37	2.75	2.6
7	4.6	2.8	2.35	1.16	2.8	2.55	2.22	1.95	2.12	2.6	3.0	2.5
8	4.1	2.6	2.4	11.1	2.75	2.65	2.17	1.96	2.12	2.65	3.05	2.5
9	4.1	2.85	2.4	8.6	2.65	2.55	2.11	1.89	2.24	2.65	3.15	2.48
10	3.7	2.95	2.5	7.4	2.6	2.46	2.08	1.90	2.9	2.65	3.0	2.8
11	3.5	2.7	2.6	6.5	2.5	2.42	2.16	1.82	3.1	2.65	2.9	3.0
12	3.8	2.75	2.8	6.0	2.5	3.1	2.12	1.84	2.8	2.6	2.8	3.1
13	4.5	2.65	3.1	5.6	2.5	5.2	2.08	1.88	2.6	2.5	3.05	3.3
14	6.0	2.5	3.45	5.5	2.38	6.2	2.03	1.86	2.48	2.44	3.3	3.8
15	6.9	2.5	4.2	7.2	2.37	5.2	2.04	1.83	2.44	2.42	3.2	3.9
16	5.5	2.5	4.3	6.7	2.32	4.35	1.99	1.82	2.34	2.37	3.05	4.8
17	4.1	2.5	3.85	5.8	2.30	......	2.03	1.80	2.28	2.32	3.05	5.3
18	3.6	2.5	3.45	5.0	2.31	......	2.08	1.82	2.22	2.6	3.7	5.0
19	3.5	2.8	3.25	4.5	2.29	......	2.05	1.83	2.22	3.45	4.8	4.6
20	3.4	3.0	3.0	4.6	2.24	......	2.06	1.84	2.18	3.5	4.8	4.5
21	3.35	2.8	3.05	4.6	2.21	2.8	2.10	1.85	2.13	3.4	4.2	4.6
22	3.2	2.6	3.35	4.8	2.25	2.7	2.09	1.82	2.12	3.35	3.9	4.6
23	3.0	2.6	4.6	5.0	2.22	2.65	2.02	1.85	2.11	4.4	3.7	6.3
24	3.0	2.55	4.9	4.5	2.36	2.6	2.00	1.88	2.10	4.9	3.6	6.0
25	2.95	2.5	4.0	4.0	2.38	2.55	2.04	1.86	2.11	4.9	3.7	5.0
26	2.85	2.4	4.0	3.7	2.9	2.46	2.00	1.92	2.12	4.4	3.6	5.0
27	2.85	2.85	9.0	3.45	2.6	2.36	1.98	1.86	2.12	3.6	3.5	5.0
28	7.4	2.75	1.43	3.25	2.42	2.38	2.08	1.88	2.08	3.4	3.5	4.7
29	6.85	......	11.7	3.1	2.34	2.40	1.96	1.97	2.10	3.05	3.8	4.0
30	5.5	......	8.6	3.02	2.28	2.37	1.94	2.08	2.20	3.0	3.6	3.8
31	3.8	......	7.0	......	2.18	......	1.91	2.09	......	2.9	......	3.8

NOTE.— Relation of gage height to discharge was affected by backwater from anchor ice from about February 3 to March 10. There was also doubtless some backwater effect during the remainder of January, February and March. The gage heights were taken to the water-surface.

Current-meter Discharge Measurements of Susquehanna River at Binghamton, N. Y.

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Corrected discharge.
1911.			*Sq. ft.*	*Feet.*	*Sec.-ft.*
Mar. 28	C. A. Cockroff	14.24	5,680	390	29,600
April 21	C. S. De Golyer	4.59	1,980	330	6,670
June 14	C. S. De Golyer	6.14	2,490	343	10,700
June 16	C. S. De Golyer	4.33	1,840	328	920
Oct. 6 *a*	C. S. De Golyer	2.33	503	357	1,030
Oct. 7	C. S. De Golyer	2.49	1,260	302	1,510

a Measurements made by wading at Washington St. Bridge.

Mean Daily Discharge, Second-feet, of Susquehanna River at Binghamton, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1	......	3,440	43,400	5,210	4,320	4,440	1,610	272	335	920	500	1,850
2	......	3,070	54,100	4,570	4,320	4,820	1,500	500	335	920	600	1,850
3	......	3,070	45,400	4,070	4,570	4,700	1,380	335	467	700	500	1,730
4	......	3,070	37,400	3,570	7,060	3,820	1,380	272	335	700	500	1,610
5	......	2,570	27,300	3,440	5,600	3,320	1,150	335	418	700	700	1,610
6	......	3,070	25,800	3,200	4,820	3,700	1,150	335	500	600	700	1,380
7	......	1,850	33,200	3,070	3,570	6,650	1,040	272	1,150	810	700	1,040
8	......	1,850	29,400	3,070	3,320	8,000	1,040	210	810	810	1,150	......
9	......	1,850	21,900	3,320	3,320	6,380	1,150	272	700	600	1,150	......
10	......	......	15,300	2,820	3,440	5,080	920	335	700	810	1,150	......
11	......	......	12,000	2,820	3,320	4,700	920	500	418	700	3,070	......
12	......	......	10,100	2,820	3,070	6,920	1,040	418	500	600	2,700	......
13	......	......	10,100	3,820	2,700	6,920	700	418	600	335	2,570	......
14	......	......	9,500	3,320	2,450	5,730	600	335	600	335	2,210	......
15	......	......	8,140	2,820	2,330	4,440	600	335	500	500	1,970	......
16	......	......	7,190	2,330	2,090	3,820	700	335	500	210	2,090	......
17	......	......	6,250	2,090	1,970	3,940	700	418	418	500	1,850	......
18	......	......	5,600	2,210	1,850	3,820	700	418	335	467	1,730	......
19	......	......	5,080	2,570	1,850	6,380	600	335	600	418	1,610	......
20	......	......	5,860	3,940	1,850	5,210	600	418	500	500	1,610	......
21	......	......	10,300	3,440	1,850	4,320	500	722	600	418	1,610	......
22	21,500	......	10,800	3,070	1,610	3,200	700	210	418	418	1,260	......
23	21,900	......	10,000	2,820	1,850	2,700	500	335	418	210	1,380	......
24	16,900	......	10,400	2,820	1,610	2,330	418	335	500	500	1,500	......
25	11,400	......	11,100	3,700	1,970	2,210	500	335	210	418	1,850	......
26	8,140	......	12,500	3,700	13,000	2,090	500	272	418	500	2,090	......
27	6,250	......	11,100	5,860	10,400	1,850	600	335	418	418	1,970	......
28	5,600	24,200	8,580	5,860	8,000	1,970	500	272	600	500	1,850	......
29	4,950	......	6,920	4,570	5,860	1,850	500	210	272	335	1,850	......
30	3,320	......	6,380	4,700	4,440	1,850	500	335	500	162	1,850	......
31	3,440	......	5,600	......	4,320	......	418	272	......	500	......	......

NOTE.— Daily discharge is determined from a rating curve somewhat poorly defined. This table supersedes that for 1910, published on page 703 of the State Engineer's report for 1910.

Mean Daily Discharge, Second-feet, of Susquehanna River at Binghamton, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	6,120	3,790	1,400	8,880	2,330	974	1,130	436	792	936	2,810	3,790
2......	8,040	2,930	1,200	6,930	2,930	1,200	974	462	792	1,650	3,420	3,540
3......	18,500	2,400	1,100	5,850	4,040	1,010	936	436	675	1,440	3,170	3,050
4......	17,600	2,000	1,000	5,320	3,420	1,010	826	410	615	1,300	2,570	2,450
5......	11,500	2,200	1,000	7,200	2,930	843	843	436	555	1,300	2,100	1,870
6......	6,660	1,800	900	19,200	2,450	1,050	955	436	540	1,180	1,980	1,650
7......	6,660	1,500	900	28,400	2,100	1,540	898	475	724	1,650	2,570	1,440
8......	5,320	1,400	800	26,700	1,980	1,760	809	488	724	1,760	2,690	1,440
9......	5,320	1,200	800	18,500	1,760	1,540	707	399	936	1,760	2,930	1,400
10......	4,290	1,100	1,100	14,800	1,650	1,360	660	410	2,330	1,760	2,570	2,100
11......	3,790	1,000	1,650	12,000	1,440	1,280	792	322	2,810	1,760	2,330	2,570
12......	4,540	1,000	2,100	10,600	1,440	2,810	724	344	2,100	1,650	2,100	2,810
13......	6,390	1,000	2,810	9,440	1,440	8,320	660	388	1,650	1,440	2,690	3,290
14......	10,600	900	3,660	9,160	1,200	11,200	630	366	1,400	1,320	3,290	4,540
15......	13,200	900	5,580	14,200	1,180	8,320	600	333	1,320	1,280	3,050	4,800
16......	9,160	800	5,850	12,600	1,090	5,980	527	322	1,130	1,180	2,690	7,200
17......	5,320	800	4,670	10,000	1,050	5,200	630	300	1,010	1,090	2,690	8,600
18......	4,040	1,000	3,660	7,760	1,070	4,430	660	322	898	1,650	4,290	7,760
19......	3,790	1,800	3,170	6,390	1,030	3,650	615	333	898	3,660	7,200	6,660
20......	3,540	1,500	2,570	6,660	936	2,880	630	344	826	3,790	7,200	6,390
21......	3,420	1,200	2,690	6,660	879	2,100	690	355	741	3,540	5,580	6,660
22......	3,050	1,000	3,420	7,200	955	1,870	675	322	724	3,420	4,800	6,660
23......	2,570	900	6,660	7,760	898	1,760	570	355	707	6,120	4,290	11,500
24......	2,570	900	7,480	6,390	1,160	1,650	540	388	690	7,480	4,040	10,600
25......	2,450	900	5,060	5,060	1,200	1,540	600	366	707	7,480	4,290	7,760
26......	2,220	1,000	5,060	4,290	2,330	1,360	540	436	724	6,120	4,040	7,760
27......	2,220	1,800	19,800	3,660	1,650	1,160	514	366	724	4,040	3,790	7,760
28......	14,800	1,600	38,100	3,170	1,280	1,200	660	388	660	3,540	3,790	6,930
29......	13,100	......	28,800	2,810	1,130	1,240	488	501	690	2,690	4,540	5,060
30......	9,160	......	18,500	2,620	1,010	1,180	462	660	860	2,570	4,040	4,540
31......	4,540	......	13,600	......	826	......	423	675	......	2,330	......	4,540

NOTE.— Daily discharge is determined from a fairly well-defined discharge rating curve. Daily discharge, February 3 to March 10, is estimated from climatological records and the discharge from adjacent drainage areas. Discharge June 17 to 20 is interpolated.

Monthly Discharge of Susquehanna River at Binghamton, N. Y.
[Drainage area, 2,400 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	....	....	3,760	1.57	1.81
February	....	....	2,490	1.04	1.08
March	54,100	5,080	16,700	6.96	8.02
April	5,830	2,090	3,520	1.47	1.64
May	13,000	1,610	3,960	1.65	1.90
June	8,000	1,850	4,240	1.77	1.98
July	1,610	418	810	0.338	0.39
August	500	210	331	0.138	0.16
September	1,150	210	502	0.209	0.23
October	920	162	533	0.222	0.26
November	3,070	500	1,540	0.642	0.72
December	....	....	899	0.375	0.43

NOTE.— Discharge for periods during which ice was present is estimated by means of climatological records and the records of discharge at Wilkes-Barre.

Mean discharge, January 1 to 21, is estimated at 600 second-feet; no great variation in discharge.

Mean discharge, February 10 to 27, is estimated at 1,200 second-feet, ranging from about 800 second-feet to about 3,000 second-feet.

Mean discharge, December 8 to 31, is estimated at 700 second-feet; no great variation in discharge.

Determinations of discharge for January, February and December, published on page 708 of the State Engineer's report for 1910, have been revised.

Monthly Discharge of Susquehanna River at Binghamton, N. Y.
[Drainage area, 2,400 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	18,500	2,220	6,920	2.88	3.32
February	3,790	800	1,440	0.600	0.62
March	38,100	800	6,290	2.62	3.02
April	28,400	2,620	9,670	4.03	4.50
May	4,040	826	1,640	0.683	0.79
June	11,200	843	2,710	1.13	1.26
July	1,130	423	689	0.287	0.33
August	675	300	406	0.169	0.19
September	2,810	540	998	0.416	0.46
October	7,480	936	2,670	1.11	1.28
November	7,200	1,980	3,580	1.49	1.66
December	11,500	1,400	5,070	2.11	2.43

CHENANGO RIVER AT BINGHAMTON, N. Y.

The gaging station, which was established July 31, 1901, by Robert E. Horton, has since been maintained by the U. S. Geological Survey in coöperation with this Department. It is located at the Court street bridge, Binghamton.

The bridge to which the gage is attached stands squarely across the stream at a point where there is a good bed of gravel and small cobblestones and a smooth, uniform current. The channel is obstructed by three masonry piers supporting the four spans of the bridge, 79 feet clear width each, the bridge having a total length of 337 feet between abutments. A small rift between the station and the confluence of Chenango river with the Susquehanna, about 2,500 feet below, cuts off backwater at ordinary stages of the rivers. For periods during freshets or at times when there is an abnormal rise on one or both streams, either record may be affected by backwater and too great a discharge indicated.

A standard chain gage is attached to the hand-rail of the bridge on the upstream side of the first span from the right bank. The gage is read by William Ray Monroe. The bench-mark is a circular chisel draft on the upstream corner of the bridge-seat on the left abutment. Its assumed elevation is 100.00. The elevation of water-surface, when the gage reads zero, is 65.98.

In estimating the run-off of Chenango river, the area directly tributary to storage reservoirs, from which diversion is made to supply Erie canal, has been deducted from the total natural drainage area. The diversion area of six reservoirs at the head of

Chenango river, whose outflow is turned into Erie canal through Oriskany creek, is about 30 square miles. The diversion area of De Ruyter reservoir, at the head of Tioughnioga river, whose outflow is turned into Erie canal through Limestone creek, is 18.2 square miles. These two areas have been substracted from the natural drainage area of 1,580 square miles, giving an effective area of 1,532 square miles. This estimate is approximate, as no allowance for direct inflow to feeder channels from additional areas, nor for waste into the original stream, has been made. The gross area, from which more or less run-off is diverted, is about 105 square miles.

Mean Daily Gage Height, in Feet, of Chenango River at Binghamton, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	7.6	7.15	6.25	8.9	6.45	5.95	5.46	5.29	5.74	6.55	7.2	7.3
2	8.4	7.1	6.45	8.3	7.0	6.15	5.36	5.18	5.64	5.81	6.85	7.0
3	12.2	6.7	6.3	7.7	7.3	5.97	5.36	5.18	5.58	6.05	6.55	6.85
4	11.8	6.5	6.15	7.6	6.85	5.84	5.33	5.28	5.53	5.89	6.45	6.65
5	9.4	6.55	6.4	8.5	6.6	5.82	5.48	5.18	5.49	6.20	6.3	6.5
6	8.1	6.0	6.0	12.4	6.4	6.25	5.58	5.18	5.58	6.05	6.3	6.4
7	8.0	6.05	6.0	15.5	6.25	6.65	5.48	5.36	6.2	6.35	6.7	6.3
8	7.6	6.15	5.9	14.8	6.2	6.4	5.34	5.32	6.15	6.65	6.9	6.3
9	7.6	6.35	5.85	12.2	6.1	6.2	5.34	5.32	6.8	6.4	6.65	6.3
10	7.2	6.2	6.05	11.0	6.05	5.96	5.24	5.42	7.5	6.0	6.45	6.8
11	6.95	6.15	6.3	10.0	6.0	5.9	5.28	5.28	7.0	6.1	6.4	7.0
12	7.3	6.1	6.3	9.6	5.96	7.0	5.28	5.22	6.5	6.2	6.35	7.5
13	8.1	6.1	6.8	9.7	5.87	8.3	5.26	5.19	6.5	6.2	7.2	8.3
14	9.4	6.1	7.4	9.1	5.82	9.2	5.2	5.39	6.25	6.05	6.9	8.3
15	10.2	6.0	8.1	11.0	5.79	8.0	5.1	5.36	6.0	5.98	6.7	8.0
16	8.6	5.9	8.0	10.3	5.74	6.95	5.16	5.41	6.0	5.94	6.65	8.9
17	7.4	6.0	7.1	9.2	5.72	6.95	5.0	5.70	5.88	5.8	6.6	9.3
18	7.1	6.2	7.2	8.4	5.72	6.55	5.9	5.56	5.86	6.4	7.2	8.9
19	7.0	6.65	6.75	7.9	5.70	6.25	5.82	5.49	5.76	7.6	8.1	8.6
20	6.9	6.35	6.8	8.0	5.70	6.05	5.64	5.26	5.66	7.1	8.1	......
21	6.8	6.1	6.7	7.9	5.70	5.88	5.6	5.44	5.64	6.9	7.5	......
22	6.7	6.1	7.0	8.0	5.68	5.77	5.54	5.35	5.56	6.75	7.3	6.90
23	6.6	6.1	8.6	8.3	5.63	5.68	5.49	5.35	5.62	8.2	6.95	10.0
24	6.2	6.1	8.3	7.9	6.35	5.72	5.53	5.35	5.60	8.2	6.9	10.0
25	6.4	6.05	7.4	7.4	7.1	5.68	5.47	5.34	5.60	7.4	7.0	8.9
26	6.3	6.15	7.6	7.1	6.7	5.57	5.54	5.38	5.61	6.95	6.9	8.6
27	6.45	6.4	12.9	6.9	6.35	5.58	5.44	5.46	5.50	6.8	6.8	8.6
28	11.3	6.55	18.1	6.7	6.1	5.66	5.44	5.39	5.32	6.65	6.8	8.2
29	10.5	......	15.3	6.55	5.94	5.67	5.34	5.74	5.54	6.45	7.8	6.85
30	8.9	......	12.1	6.45	5.80	5.54	5.17	6.05	5.46	6.35	7.8	6.55
31	7.4	......	10.5	......	5.74	......	5.35	5.97	......	6.5	......	6.5

NOTE.— Relation of gage height to discharge probably was affected by anchor ice from February 7 to March 11. There was also undoubtedly some backwater for brief periods during the remainder of January, February and March. Gage heights were taken to water-surface.

Current-meter Discharge Measurements of Chenango River at Binghamton, N. Y.

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Corrected discharge.
1911.			*Sq. ft.*	*Feet.*	*Sec.-ft.*
Mar. 29	C. A. Cockroft	16.30	4,150	340	24,200
April 6	C. A. Cockroft	12.60	2,890	340	16,000
April 21	C. S. De Golyer	7.90	1,280	316	4,080
June 14	C. S. De Golyer	9.39	1,800	334	5,250
June 16	C. S. De Golyer	7.16	1,060	330	2,290
Sept. 28	C. C. Covert	5.54	576	284	468
Oct. 4 *a*	C. S. De Golyer	5.95	698	304	825

a Measurement made partly by wading under Court street bridge.

Mean Daily Discharge, Second-feet, of Chenango River at Binghamton, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1	......	1,620	26,200	2,760	1,760	2,400	460	235	305	850	460	1,620
2	......	1,410	(34,600)	2,400	2,340	(2,260)	460	235	235	745	460	1,480
3	......	1,620	28,200	2,040	2,250	2,110	380	305	202	645	305	1,410
4	......	1,480	22,400	1,760	5,300	(1,800)	420	270	305	645	380	1,340
5	......	1,210	16,200	1,680	3,620	1,480	380	270	420	550	550	1,340
6	......	1,210	15,600	1,550	2,760	2,840	380	270	550	505	505	1,080
7	......	798	20,000	1,480	2,180	3,620	380	270	645	505	960	960
8	......	745	17,300	1,620	1,900	3,860	380	270	745	505	960	......
9	......	......	12,600	1,480	1,760	2,690	380	270	695	420	905	......
10	......	......	8,420	1,480	2,110	2,110	342	305	460	505	1,080	......
11	......	......	6,460	1,280	1,760	2,110	305	235	380	505	2,690	......
12	......	......	5,650	1,550	1,680	3,860	305	305	420	420	2,620	......
13	......	......	5,740	1,620	1,410	3,380	305	305	380	460	2,110	......
14	......	......	5,390	1,280	1,280	2,620	270	305	645	460	1,820	......
15	......	......	4,520	1,140	1,210	1,900	235	305	505	460	1,730	......
16	......	......	3,700	1,080	1,080	1,760	305	270	380	202	1,680	......
17	......	......	3,540	960	960	2,250	342	305	342	460	1,550	......
18	......	......	2,920	960	960	1,680	380	305	235	460	1,410	......
19	......	......	2,840	1,480	1,080	2,320	235	305	235	380	1,410	......
20	......	......	3,860	1,550	960	1,760	235	235	460	420	1,340	......
21	......	......	6,460	1,340	1,140	1,340	235	305	235	235	1,210	......
22	12,000	......	6,280	1,210	1,480	1,020	235	305	305	380	1,210	......
23	12,600	......	6,190	1,080	1,280	850	235	270	305	170	1,140	......
24	9,400	......	6,280	960	1,210	798	170	270	235	380	1,210	......
25	6,100	......	6,730	1,280	2,250	695	235	342	202	380	1,820	......
26	4,180	......	7,190	2,040	7,760	645	142	305	342	305	2,250	......
27	3,380	......	6,460	2,470	5,480	598	202	270	1,210	420	2,040	......
28	2,990	12,900	4,610	2,040	4,440	550	235	235	960	420	1,620	......
29	2,620	......	3,860	1,480	3,220	598	380	235	1,760	420	1,620	......
30	1,760	......	3,380	1,960	2,470	505	305	235	1,080	305	1,550	......
31	1,620	......	3,060	......	2,540	......	305	270	......	460	......	......

NOTE.— Daily discharge is determined from discharge rating curve not very well defined. Daily discharge, January 1-21, February 9-27 and December 8-31, was revised for this report, but is not published.

Mean Daily Discharge, Second-feet, of Chenango River at Binghamton, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	O	Nov.	Dec.
1911.												
1	3,530	2,790	1,000	6,060	1,720	1,020	398	273	636	1,510	2,350	2,490
2	5,020	2,710	900	4,820	2,550	1,290	322	198	546	700	1,780	2,080
3	13,900	2,100	960	3,700	3,030	1,040	322	198	494	945	1,510	1,780
4	12,900	1,800	800	3,530	2,320	894	301	266	454	780	1,390	1,630
5	7,130	1,880	800	5,220	1,950	872	414	198	422	1,110	1,220	1,450
6	4,430	1,080	700	14,400	1,650	1,430	494	198	494	945	1,220	1,330
7	4,240	900	700	23,200	1,430	2,020	414	322	1,110	1,280	1,690	1,220
8	3,530	900	600	21,200	1,360	1,650	308	294	1,060	1,630	1,950	1,220
9	3,530	800	600	13,900	1,220	1,360	308	294	1,720	1,330	1,630	1,220
10	2,870	800	900	10,800	1,150	1,030	238	366	2,770	890	1,390	1,720
11	2,480	700	1,200	8,460	1,080	960	266	266	2,080	1,000	1,330	2,080
12	3,030	700	1,500	7,570	1,030	2,550	266	224	1,450	1,110	1,280	2,770
13	4,430	700	2,250	6,480	927	3,960	252	204	1,450	1,110	2,350	3,960
14	7,130	700	3,190	6,690	872	6,440	210	343	1,160	945	1,950	3,960
15	8,920	650	4,430	10,800	840	3,500	150	322	890	870	1,690	3,500
16	5,430	600	4,240	9,150	787	2,020	186	358	890	830	1,630	4,930
17	3,190	900	2,710	6,690	766	2,020	100	600	770	690	1,570	5,610
18	2,710	1,200	2,870	5,020	766	1,510	790	478	750	1,330	2,350	4,930
19	2,550	1,600	2,180	4,060	745	1,160	710	422	654	2,910	3,650	4,440
20	2,400	1,300	2,250	4,240	745	945	546	252	564	2,210	3,650	3,610
21	2,250	1,100	2,100	4,060	745	770	510	382	546	1,950	2,770	2,780
22	2,100	900	2,550	4,240	725	663	462	315	478	1,760	2,490	1,950
23	1,950	800	5,430	4,820	675	582	422	315	528	3,800	2,020	6,850
24	1,360	700	4,820	4,060	1,580	618	454	315	510	3,800	1,950	6,850
25	1,650	800	3,190	3,190	2,710	582	406	308	510	2,630	2,680	4,930
26	1,500	1,000	3,530	2,710	2,100	486	462	336	519	2,020	1,950	4,440
27	1,720	1,400	15,800	2,400	1,580	494	382	398	430	1,720	1,720	4,440
28	1,600	1,200	31,200	2,100	1,220	564	382	343	294	1,630	1,720	3,800
29	9,630	......	22,600	1,880	1,010	573	308	636	462	1,390	3,200	1,780
30	6,060	......	13,600	1,720	850	462	192	945	398	1,280	3,200	1,510
31	3,190	......	9,630	......	787	......	315	860	......	1,450	......	1,450

NOTE.— Daily discharge is determined from two discharge rating curves, the first applicable January 1 to June 12, the second applicable June 13 to December 31. Both curves are fairly well defined at low and medium stages, but at high stages are somewhat uncertain, owing to variable effect of backwater from Susquehanna river.

Discharge, February 7 to March 11, is estimated from climatological records and the discharge from adjacent drainage areas. Discharge, December 20 and 21, is interpolated.

Monthly Discharge of Chenango River at Binghamton, N. Y.
[Drainage area, 1,530 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	....	....	2,060	1.350	1.56
February	....	....	1,430	0.935	0.97
March	(34,600)	2,840	9,890	6.460	7.45
April	2,760	960	1,570	1.030	1.15
May	7,760	960	2,310	1.510	1.74
June	3,860	505	1,880	1.230	1.37
July	460	142	308	0.201	0.23
August	342	235	278	0.182	0.21
September	1,760	202	508	0.332	0.37
October	850	170	451	0.295	0.34
November	2,690	305	1,350	0.882	0.98
December	....	....	646	0.422	0.49
The year	34,600	142	1,890	1.240	16.86

NOTE.—Discharge for periods during which ice was present is estimated by means of climatological records and record of discharge at Wilkes-Barre.

Mean discharge, January 1 to 21, is estimated at 350 second-feet; no great variation in discharge.

Mean discharge, February 9 to 27, is estimated at 900 second-feet, ranging from about 500 second-feet to about 2,000 second-feet.

Mean discharge from December 8 to 31, is estimated at 450 second-feet; no great variation in discharge.

Determinations for January, February and December, published on page 711 of the Engineer's report for 1910, have been revised on account of ice conditions.

Monthly Discharge of Chenango River at Binghamton, N. Y.
[Drainage area, 1,530 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	13,900	1,360	4,400	2.880	3.32
February	2,790	600	1,170	0.765	0.80
March	31,200	600	4,810	3.140	3.62
April	23,200	1,720	6,910	4.520	5.04
May	3,030	675	1,320	0.863	0.99
June	5,440	462	1,420	0.928	1.04
July	790	100	364	0.238	0.27
August	945	198	362	0.237	0.27
September	2,770	294	835	0.546	0.61
October	3,800	690	1,530	1.000	1.15
November	3,650	1,220	2,020	1.320	1.47
December	6,850	1,220	3,120	2.040	2.35

CHEMUNG RIVER.

DESCRIPTION.

Chemung river is formed at Painted Post, N. Y., by the confluence of Tioga and Cohocton rivers. Cohocton river lies entirely in the state of New York. Tioga river receives, just above its mouth, Canisteo river, a large tributary, which also has its drainage basin in New York to the south of Cohocton. The drainage area of Tioga river, above the Canisteo, is mainly in Pennsylvania. Chemung river flows southeastward through Corn-

ing, Elmira and Chemung, crosses the state line and flows for a short distance in Pennsylvania, then returns to New York, and crosses again to Pennsylvania near Waverly, finally emptying into the Susquehanna near Athens, Bradford county, Pa. The total length of the river is about 40 miles, of which 30 miles lie in New York; the drainage area, measured at the mouth, is 2,520 square miles.

The topographic features of the basin are, as a rule, bold and broad. The hills rise to a height of several hundred feet on either side, within a short distance of the stream. The upland plateau is to a large extent wooded, has impervious soil, no lake storage, and few marsh areas. Tributaries are ramifying and uniformly distributed, though not very numerous, and dry gullies, or flood channels, are common. The main river is sluggish, with low banks and a broad valley or flood plain, which is often overflowed. The concentration of storm waters from the three large streams, which unite just above Corning, makes possible excessive floods. Dikes have been erected in the cities of Elmira and Corning for protection. One of the highest recorded freshets in the stream occurred June 1, 1889. It was preceded by phenomenal rainfall, aggregating several inches in a few hours during the night of May 31. The discharge at this time has been estimated at 67 second-feet per square mile from 2,055 square miles, or 138,000 second-feet.[a]

CHEMUNG RIVER AT CHEMUNG, N. Y.

The gaging station was established September 7, 1903, by Robert E. Horton. It has since been maintained by the U. S. Geological Survey in coöperation with this Department. It is located at the suspension highway bridge, midway between Chemung, N. Y., and Willawana, Pa., near the state line.

The channel is straight for 700 feet above and 800 feet below the station. The right bank is high, cleared, and not subject to overflow; the left bank is medium height, wooded, and will overflow at high water. The bed of the stream is composed of gravel and is clean and permanent. The current is good. There is but one channel at all stages.

[a] Report of Francis Collingwood, C. E., on the protection of the city of Elmira, N. Y. against floods.

Discharge measurements are made from the downstream side of the bridge, which has a single span of 395 feet. The initial point for soundings is the face of the right abutment on the downstream side.

A standard chain gage is attached to the upstream side of the bridge, near the right bank, and is read twice each day by Daniel L. Orcutt. The bench-mark is formed by three nails driven into a telephone pole 70 feet to the right of the initial point for soundings and about 30 feet upstream. The pole is marked with black paint "U. S. G. S. B. M." Elevation of bench-mark is assumed at 100.00. The elevation of water-surface, when the gage reads zero, is 70.12.

The smooth water reaches of the stream became ice-covered in winter. Needle ice forms over the rapids and is carried under the surface ice. Much of the winter flow apparently filters through these beds of needle ice at times. The conditions render the estimation of the daily discharge in winter impracticable.

Mean Daily Gage Height, in Feet, of Chemung River at Chemung, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	......	3.60	5.10	4.70	3.55	2.19	1.93	1.65	2.80	3.00	2.75	3.30
2	......	3.65	4.40	4.30	4.50	2.21	1.89	1.71	2.55	3.70	2.95	3.15
3	7.90	3.35	4.10	4.00	4.60	2.33	1.90	1.61	2.37	4.50	2.95	3.05
4	5.80	3.10	3.70	3.85	4.00	2.22	1.93	1.61	2.23	3.75	2.80	2.95
5	4.50	3.15	3.50	4.40	3.70	2.27	1.89	1.59	2.13	3.45	2.70	2.75
6	4.00	3.00	3.40	7.30	3.50	2.29	1.77	1.65	2.11	3.45	2.67	2.85
7	3.95	2.85	3.15	8.50	3.35	4.00	1.79	1.59	2.29	3.50	2.70	2.75
8	4.10	3.00	3.05	7.80	3.10	3.25	1.76	1.66	2.73	4.90	2.85	2.75
9	3.60	3.10	3.20	6.40	3.10	2.95	1.75	1.67	2.57	4.00	3.25	2.85
10	3.35	3.10	3.75	6.70	3.00	2.70	1.75	1.61	3.25	3.60	3.10	3.00
11	3.25	2.90	5.40	6.00	2.95	2.50	1.76	1.63	3.65	3.55	2.95	3.70
12	3.60	2.85	6.30	5.50	2.90	2.48	1.73	1.59	3.15	4.00	2.90	3.60
13	5.70	2.70	3.40	5.10	2.80	4.50	1.69	1.56	2.90	3.80	2.95	4.00
14	5.00	2.65	6.40	4.80	2.70	4.60	1.69	1.49	2.85	3.50	3.20	6.50
15	8.70	2.45	6.40	5.30	2.65	3.70	1.67	1.67	2.65	3.25	3.05	5.30
16	6.20	2.60	5.70	5.00	2.60	3.30	1.64	1.59	2.55	3.10	2.95	5.80
17	4.70	2.65	4.40	4.70	2.60	3.00	1.68	1.63	2.75	3.00	2.90	6.00
18	4.20	3.35	4.50	4.40	2.60	2.80	1.78	1.63	2.55	3.10	2.90	5.40
19	3.95	5.90	4.10	4.30	2.60	2.60	1.79	1.74	2.45	3.70	3.50	4.80
20	3.80	4.80	3.85	5.40	3.25	2.50	1.95	1.65	2.33	3.60	3.70	4.20
21	3.60	3.95	3.90	6.50	3.30	2.37	1.97	1.67	2.23	3.35	3.40	3.85
22	3.50	3.65	4.30	5.80	2.90	2.31	1.85	1.60	2.19	3.20	3.25	3.80
23	3.40	3.55	5.80	6.00	2.70	2.19	1.75	1.61	2.11	3.25	3.15	3.85
24	3.10	3.45	5.20	5.60	2.60	2.17	1.75	1.58	2.06	3.35	3.05	4.30
25	3.00	3.45	4.20	5.00	2.65	2.11	1.72	1.67	2.08	3.20	3.10	3.90
26	3.00	3.50	4.20	4.50	2.60	2.19	1.69	1.71	2.11	3.05	3.20	3.70
27	2.95	6.60	5.20	4.20	2.47	2.07	1.69	1.63	2.03	2.90	3.10	3.75
28	5.20	6.90	8.60	4.00	2.35	2.07	1.69	1.71	2.03	2.85	3.05	4.20
29	6.10	......	6.70	3.75	2.60	2.00	1.67	3.10	2.19	2.80	3.20	3.40
30	5.10	......	5.60	3.60	2.18	1.99	1.65	4.30	2.19	2.75	3.85	3.25
31	4.30	......	5.20	......	2.22	......	1.61	3.25	......	2.71	......	3.30

NOTE.— Relation of gage height to discharge probably was affected by ice, January 1 to 2, February 8 to 14 and February 19 to March 9. There may also have been more or less backwater from ice at other times during January, February and March. It is not known whether gage heights were to water-surface or to top of the ice.

Gage readings, April 20 to December 31, were made from a temporary location of the gage 250 feet above the bridge to which the gage was originally attached. All gage heights have been reduced to original datum.

The suspension bridge, to which the gage was originally attached, was removed during the summer of 1911. The suspension bridge is being replaced by a two-span steel truss bridge, to which the gage will be attached. Daily estimates for 1911 are withheld, pending confirmation of the discharge rating curve for the new section.

Current-meter Discharge Measurements of Chemung River at Chemung, N. Y.

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Corrected discharge.
			Square feet.	*Feet.*	*Second-feet.*
1911.					
April 20......	C. S. De Golyer..............	a 19.22	1,860	241	4,370
Oct. 5......	C. S. De Golyer..............	b 17.44	739	358	1,290

a Gage moved on account of bridge being torn down; gage height, referred to old datum, 5.25.
b Measurement made by wading about one-quarter mile below bridge; gage height, referred to old datum, 3.47.

Monthly Discharge of Chemung River at Chemung, N. Y.
[Drainage area, 2,440 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January..........................	26,900	....	2,260	0.926	1.070
February..........................	24,800	....	1,500	0.615	0.640
March..........................	42,400	1,920	10,600	4.340	5.000
April..........................	52,100	536	6,460	2.650	2.960
May..........................	16,700	985	4,240	1.740	2.010
June..........................	3,800	470	1,200	0.492	0.550
July..........................	526	164	291	0.119	0.140
August..........................	168	99	131	0.054	0.062
September..........................	625	96	204	0.084	0.094
October..........................	444	75	152	0.062	0.071
November..........................	640	126	264	0.108	0.120
December..........................	816	....	448	0.184	0.210

NOTE.— Discharge for periods during which ice existed, is estimated by means of climatological records and record of discharge at Wilkes-Barre and at Rochester.
Mean discharge, January 1 to 21, is estimated at 350 second-feet; probably about constant.
Mean discharge, February 6 to 27, is estimated at 600 second-feet, ranging from about 400 second-feet to about 1,500 second-feet.
Mean discharge, December 7 to 31, is estimated at 400 second-feet; probably about constant.
This table supersedes that for 1910 published on page 715 of the State Engineer's report for 1910.

ALLEGHENY RIVER DRAINAGE BASIN.

DESCRIPTION OF ALLEGHENY RIVER.

Allegheny river, which, with the Monongahela, forms the Ohio at Pittsburg, rises in northern Pennsylvania, flows north into the state of New York, then flows south through western Pennsylvania. The head waters have an elevation of about 2,500 feet and join those of Genesee river on the north and of the Susquehanna on the east. The total length from the source to the mouth at Pittsburg is about 300 miles, 47 of which are in the state of New York. The principal facts concerning this river have been given in a report by George Lehman, assistant engineer, contained in

House Document No. 72, Fifty-fifth Congress, third session. Although this river drains a large area, much of which is of an elevated and even mountainous character, yet it is of comparatively small value for water-power. The total fall in 255 miles, between Olean, N. Y., and the mouth, is only 725 feet, or an average of less than 3 feet per mile. This descent is accomplished without abrupt pitches, and with few rapids having a fall of much consequence. The drainage basin of Allegheny river above Red House is comparatively rugged and precipitous. It is mostly covered with brush and light forest. A considerable amount of snow accumulates in the winter and feeds the stream until late in spring. The basin is underlain by shales of the Chemung series, and the depth of soil is usually small, excepting in stream valleys. There are no lakes and no artificial storage tributary to the stream. The Cuba reservoir, which feeds the Erie canal through Genesee river, lies on the divide between the Allegheny and Genesee drainage basins. A part of the overflow from this reservoir passes into the Allegheny, the rest passes into Genesee river. During about half of the year the river is navigable for small steamers to Franklin, 123 miles above Pittsburg.

ALLEGHENY RIVER AT RED HOUSE, N. Y.

This station was established September 4, 1903, by Robert E. Horton. It has since been maintained by the U. S. Geological Survey in coöperation with this Department. It is located at the Red House bridge, near the stations of the Erie and Pennsylvania railroads and about 5 miles below Salamanca, N. Y., about 13 miles above the point where the river leaves New York state. At Olean, N. Y., the wasteway from the Cuba reservoir enters the stream through Olean creek. This reservoir is located on the divide between Oil creek, tributary to Allegheny river, and Genesee river. The storage is commonly turned into Genesee river through the abandoned summit level of Genesee Valley canal, but may be diverted into Oil creek through the guard-lock at the head of the canal.

The channel is straight for 800 feet above and below the station, 494 feet wide between abutments, broken by two piers. The current velocity is well distributed. The right bank is high and

does not overflow. The left bank overflows only at flood stages. At extreme high water there is an additional flood channel on the left bank. The bed is of gravel and is regular.

Discharge measurements are made from the downstream side of the bridge. The initial point for soundings is the left end of the downstream side of the bridge.

A standard chain gage is fastened to the upstream side of the bridge near the middle of the left span; length of chain, 24.16 feet. The gage was read twice each day during 1911. The bench-mark is a circle cut on the downstream side of the left abutment; assumed elevation, 100.00. The elevation of water-surface, when the gage reads zero, is 78.91.

Mean Daily Gage Height, in Feet, of Allegheny River at Red House, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.....	6.4	6.30	4.80	5.6	5.20	3.60	3.70	2.95	4.40	5.20	4.25	5.30
2.....	7.1	5.70	4.70	5.2	5.20	3.65	3.50	3.05	4.40	6.60	4.20	5.50
3.....	8.8	5.40	4.60	4.9	5.40	3.60	3.35	3.00	4.60	6.40	4.50	5.20
4.....	8.1	5.20	4.50	5.0	5.20	3.55	3.20	3.00	4.60	6.30	4.25	4.70
5.....	7.4	4.10	4.25	6.2	4.90	3.55	3.20	3.10	4.60	6.10	4.80	4.50
6.....	6.8	4.10	4.00	6.8	4.80	3.60	3.20	3.35	5.80	5.40	5.00	4.45
7.....	5.7	4.20	4.00	8.0	4.80	3.50	3.05	3.85	6.00	4.80	5.20	4.45
8.....	5.4	4.25	4.20	8.1	4.50	3.45	3.05	3.40	5.90	4.60	5.30	4.30
9.....	5.6	4.40	4.80	7.7	4.20	3.40	3.25	3.25	5.60	4.60	5.40	4.60
10.....	6.0	4.30	5.00	7.2	4.25	3.35	3.20	3.20	6.60	4.60	5.40	4.70
11.....	6.5	4.30	5.20	6.6	4.25	4.20	3.20	3.00	5.60	4.45	5.80	4.80
12.....	6.9	4.00	5.60	6.6	3.90	4.80	3.45	2.90	5.40	4.60	5.60	5.20
13.....	7.2	4.05	5.70	6.4	3.80	5.60	3.40	3.10	5.00	4.60	5.60	7.10
14.....	8.0	4.10	5.80	6.2	3.75	5.70	3.45	3.25	4.50	4.60	5.80	7.40
15.....	8.6	4.80	6.30	6.2	3.70	5.30	3.30	3.15	4.45	4.70	5.70	7.00
16.....	8.2	5.10	6.20	6.0	3.70	4.80	3.20	3.60	4.60	4.80	5.90	6.90
17.....	7.5	5.90	5.40	5.8	3.85	4.30	3.15	3.55	4.25	4.80	6.60	6.00
18.....	6.8	6.20	5.20	5.5	3.85	4.10	3.15	3.55	4.20	4.70	6.70	5.90
19.....	6.5	5.80	5.30	5.5	3.80	3.35	3.10	3.55	4.10	4.60	6.60	4.70
20.....	6.2	5.40	5.40	5.5	3.95	3.30	3.10	3.15	4.15	4.50	6.00	4.60
21.....	6.0	4.90	5.20	5.8	3.85	3.30	3.00	3.15	3.90	4.20	5.30	5.20
22.....	5.6	5.00	5.20	6.2	3.70	3.55	3.00	3.30	3.55	4.20	5.30	5.00
23.....	5.2	5.00	6.20	6.0	3.60	3.50	3.10	3.35	3.55	4.25	5.00	5.10
24.....	4.0	5.00	5.60	5.7	3.85	3.60	3.00	3.20	3.60	4.25	5.20	5.20
25.....	5.2	5.00	5.20	5.6	4.75	3.65	3.00	3.25	3.65	4.10	5.40	5.00
26.....	6.6	4.90	5.60	5.2	5.30	3.60	3.00	3.35	3.65	4.00	5.00	4.80
27.....	6.8	5.00	6.20	5.2	4.80	3.95	2.90	3.85	3.75	4.00	4.90	4.60
28.....	9.2	4.90	8.10	5.0	4.00	4.30	2.95	6.40	3.80	3.90	4.90	4.70
29.....	8.2	......	7.80	4.8	3.85	3.80	2.80	8.60	3.80	3.95	5.40	5.30
30.....	7.6	......	6.60	4.8	3.80	3.65	2.90	7.00	5.30	3.95	5.60	5.60
31.....	7.0	......	5.80	......	3.80	......	2.90	5.40	......	4.10	......	5.40

NOTE.— The extent of effect from ice during January, February and March is very uncertain. It is quite probable that the relation of gage height to discharge was affected by ice, January 21 to 26 and February 22 to 27, and also more or less for other short periods from about January 1 to March 10.

Current-meter Discharge Measurements of Allegheny River at Red House, N. Y.

DATE.	Hydrographer.	Mean gage reading.	Total area.	Total width.	Corrected discharge.
			Square feet.	*Feet.*	*Second-feet.*
1911.					
Feb. 14......	F. J. Shuttleworth.............	4.00	1,290	341	1,470
April 19......	C. S. De Goyler...............	5.52	1,830	345	4,360

Mean Daily Discharge, Second-feet, of Allegheny River at Red House, N. Y.

DAY.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.											
1	......	23,600	3,130	8,740	2,200	320	330	337	405	1,970	3,130
2	......	41,000	3,130	8,740	2,200	320	320	424	405	2,040	2,920
3	......	28,400	3,130	10,400	2,200	320	190	500	405	2,200	2,820
4	......	26,200	2,720	12,300	2,200	320	168	655	337	2,360	2,360
5	......	25,600	2,200	12,300	2,200	320	145	1,200	360	2,280	2,280
6	......	22,600	2,200	8,740	2,200	320	145	320	570	2,120	2,040
7	......	23,600	2,200	8,740	2,200	320	145	4,600	1,310	1,820	1,750
8	......	18,800	2,200	8,740	2,200	320	145	2,720	1,200	1,470	1,610
9	......	17,000	1,750	8,740	2,200	320	145	2,040	958	1,340	1,470
10	......	16,500	1,470	7,150	1,470	320	320	1,640	710	2,040	1,470
11	......	16,500	1,470	7,150	1,470	825	405	1,200	580	4,830	1,400
12	......	15,700	1,470	5,660	1,470	825	405	945	4,320	4,320	1,200
13	......	12,300	1,610	5,660	1,470	825	320	849	362	2,360	1,000
14	......	10,100	1,610	5,660	1,470	1,470	320	710	320	2,920	800
15	......	5,660	1,200	4,320	1,470	1,470	250	622	320	2,920	700
16	......	4,570	945	4,320	825	1,470	250	481	320	2,720	600
17	......	4,320	945	3,130	825	1,470	250	452	320	2,630	500
18	......	4,320	1,200	1,470	825	825	250	405	320	2,360	400
19	......	4,060	1,200	1,470	1,470	825	320	405	362	2,450	400
20	......	5,660	3,130	1,470	1,470	825	320	362	320	2,200	400
21	......	7,460	6,240	1,470	1,470	825	320	320	337	2,120	400
22	......	8,740	6,840	1,470	825	825	250	320	264	2,040	500
23	......	8,740	7,460	1,470	825	825	320	250	405	2,540	500
24	......	9,070	10,000	2,200	825	362	500	328	550	3,940	600
25	......	9,070	12,300	2,200	825	362	600	622	710	4,320	600
26	......	9,740	17,400	1,470	320	320	500	710	945	4,700	1,000
27	10,800	9,740	16,500	1,470	320	320	500	825	1,200	4,570	......
28	17,000	9,400	14,400	1,470	320	320	500	710	1,610	5,100	......
29	......	9,400	13,100	1,470	320	362	500	600	1,970	4,320	......
30	......	8,740	14,800	1,470	320	362	452	550	1,970	3,820	......
31	......	7,150	......	2,200	......	362	320	......	1,820	......	......

NOTE.— Daily discharge is determined by means of a discharge rating curve that is well defined. Discharge, December 12 to 26, is estimated by means of climatological records, the discharge at Kittanning and in adjacent drainage areas.

Discharge, February 27, is estimated.

Determinations for January, February 1 to 27 and December 12 to 26, published on page 719 of the State Engineer's report for 1910, have been revised.

Mean Daily Discharge, Second-feet, of Allegheny River at Red House, N. Y.

DAY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1......	6,840	6,540	2,720	4,570	3,580	945	1,070	285	2,040	3,580	1,820	3,820
2......	9,070	4,830	2,540	3,580	3,580	1,010	825	362	2,040	7,460	1,750	4,320
3......	15,700	4,060	2,360	2,920	4,060	945	655	320	2,360	6,840	2,200	3,580
4......	12,700	3,580	2,200	3,130	3,580	885	500	320	2,360	6,540	1,820	2,540
5......	10,100	1,610	1,820	6,240	2,920	885	500	405	2,360	5,950	2,720	2,200
6......	8,090	1,610	1,470	8,090	2,720	945	500	655	5,100	4,060	3,130	2,120
7......	4,830	1,750	1,470	12,300	2,720	825	362	1,270	5,660	2,720	3,580	2,120
8......	4,060	1,820	1,750	12,700	2,200	768	362	710	5,380	2,360	3,820	1,900
9......	4,570	2,040	2,720	11,200	1,750	710	550	550	4,570	2,360	4,060	1,360
10......	5,660	1,900	3,130	9,400	1,820	655	500	500	7,460	2,360	4,060	2,540
11......	7,150	1,900	3,580	7,460	1,820	1,750	500	320	4,570	2,120	5,100	2,720
12......	8,410	1,470	4,570	7,460	1,340	2,720	768	250	4,060	2,360	4,570	3,580
13......	9,400	1,540	4,830	6,840	1,200	4,570	710	405	3,130	2,360	4,570	9,070
14......	12,300	1,610	5,100	6,240	1,140	4,830	768	550	2,200	2,360	5,100	10,100
15......	14,800	2,720	6,540	6,240	1,070	3,820	600	452	2,120	2,540	4,830	8,740
16......	13,100	3,350	6,240	5,660	1,070	2,720	500	945	2,360	2,720	5,380	8,410
17......	10,400	5,380	4,060	5,100	1,270	1,900	452	885	1,820	2,720	7,460	5,660
18......	8,090	6,240	3,580	4,320	1,270	1,610	452	885	1,750	2,540	7,770	5,380
19......	7,150	5,100	3,820	4,320	1,200	655	405	885	1,610	2,360	7,460	2,540
20......	6,240	4,060	4,060	4,320	1,400	600	405	452	1,680	2,200	5,660	2,360
21......	5,000	2,920	3,580	5,100	1,270	600	320	452	1,340	1,750	3,820	3,580
22......	3,700	2,000	3,580	6,240	1,070	885	320	600	885	1,750	3,820	3,130
23......	2,500	1,500	6,240	5,660	945	825	405	655	885	1,820	3,130	3,350
24......	1,470	1,200	4,570	4,830	1,270	945	320	500	945	1,820	3,580	3,580
25......	2,500	1,200	3,580	4,570	2,630	1,010	320	550	1,010	1,610	4,060	3,130
26......	5,000	1,800	4,570	3,580	3,820	945	320	655	1,010	1,470	3,130	2,720
27......	8,090	2,500	6,240	3,580	2,720	1,400	250	1,270	1,140	1,470	2,920	2,360
28......	17,400	2,920	12,700	3,130	1,470	1,900	285	6,840	1,200	1,340	2,920	2,540
29......	13,100	......	11,500	2,720	1,270	1,200	190	14,800	1,200	1,400	4,060	3,820
30......	10,800	......	7,460	2,720	1,200	1,010	250	8,740	3,820	1,400	4,570	4,570
31......	8,740	......	5,100	......	1,200	......	250	4,060	......	1,610	......	4,060

NOTE.— Daily discharge is determined from a well-defined discharge rating curve. Discharge has been applied from the open channel rating throughout January, February and March, except January 21 to 26, and February 22 to 27, which were estimated by means of climatological records, the discharge at Kittanning and the discharge from adjacent drainage areas. Daily discharge for these three months, particularly at low stages, is uncertain.

Monthly Discharge of Allegheny River at Red House, N. Y.
[Drainage area, 1,640 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1910.					
January	....	....	2,500	1.52	1.75
February	17,000	....	2,200	1.34	1.40
March	41,000	4,060	13,700	8.35	9.63
April	17,400	945	5,270	3.21	3.58
May	12,300	1,470	4,940	3.01	3.47
June	2,200	320	1,350	0.823	0.92
July	1,470	320	622	0.379	0.44
August	600	145	319	0.195	0.22
September	4,620	250	1,000	0.610	0.68
October	1,970	264	713	0.435	0.50
November	5,100	1,340	2,890	1.76	1.96
December	9,740	....	1,800	1.10	1.27

NOTE.— Discharge, January 1 to February 26, is estimated by means of climatological records, the discharge at Kittanning and in adjacent drainage areas. Mean discharge, February 1 to 26, is estimated at 1,300 second-feet.

Determinations for January, February and December, published on page 719 of the State Engineer's report for 1910, have been revised.

Monthly Discharge of Allegheny River at Red House, N. Y.
[Drainage area, 1,640 square miles.]

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.
1911.					
January	17,400	1,470	8,290	5.050	5.82
February	6,540	1,200	2,820	1.720	1.79
March	12,700	1,470	4,440	2.710	3.12
April	12,700	2,720	5,810	3.540	3.95
May	4,060	945	1,950	1.190	1.37
June	4,830	600	1,480	0.902	1.01
July	1,070	190	471	0.287	0.33
August	14,800	250	1,630	0.994	1.15
September	7,460	885	2,600	1.590	1.77
October	7,460	1,340	2,770	1.690	1.95
November	7,770	1,750	4,100	2.500	2.79
December	10,100	1,900	3,960	2.410	2.78

CONCLUSION.

The gaging records as given in this report are considered to represent existing conditions with a reasonable degree of accuracy. In this class of work much depends on the faithfulness with which gage readers perform their duties and the condition in which gages are maintained. Every effort has been made to see that the gages have been read regularly and correctly and kept in good repair.

In some cases, where several gaging stations are maintained at different points on the same stream, inconsistencies are apparent, but even so, these records are considered valuable, as they present a means of estimating the discharge that otherwise would be totally lacking.

There are numerous records published in this report which supersede those previously published. This is due to data obtained since these records were first computed. Undoubtedly other records here given will be found subject to revision when further data are obtained and rating curves more definitely defined.

Respectfully submitted,

JOHN P. NEWTON,

Assistant Engineer.

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Supplement to the Annual Report of the State Engineer and Surveyor of New York, 1911.

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